WWII

THE FALL OF FRANCE LEFT BRITAIN IN PERIL • RADAR WAS A TRUMP CARD

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Hitler planned a brutal occupation

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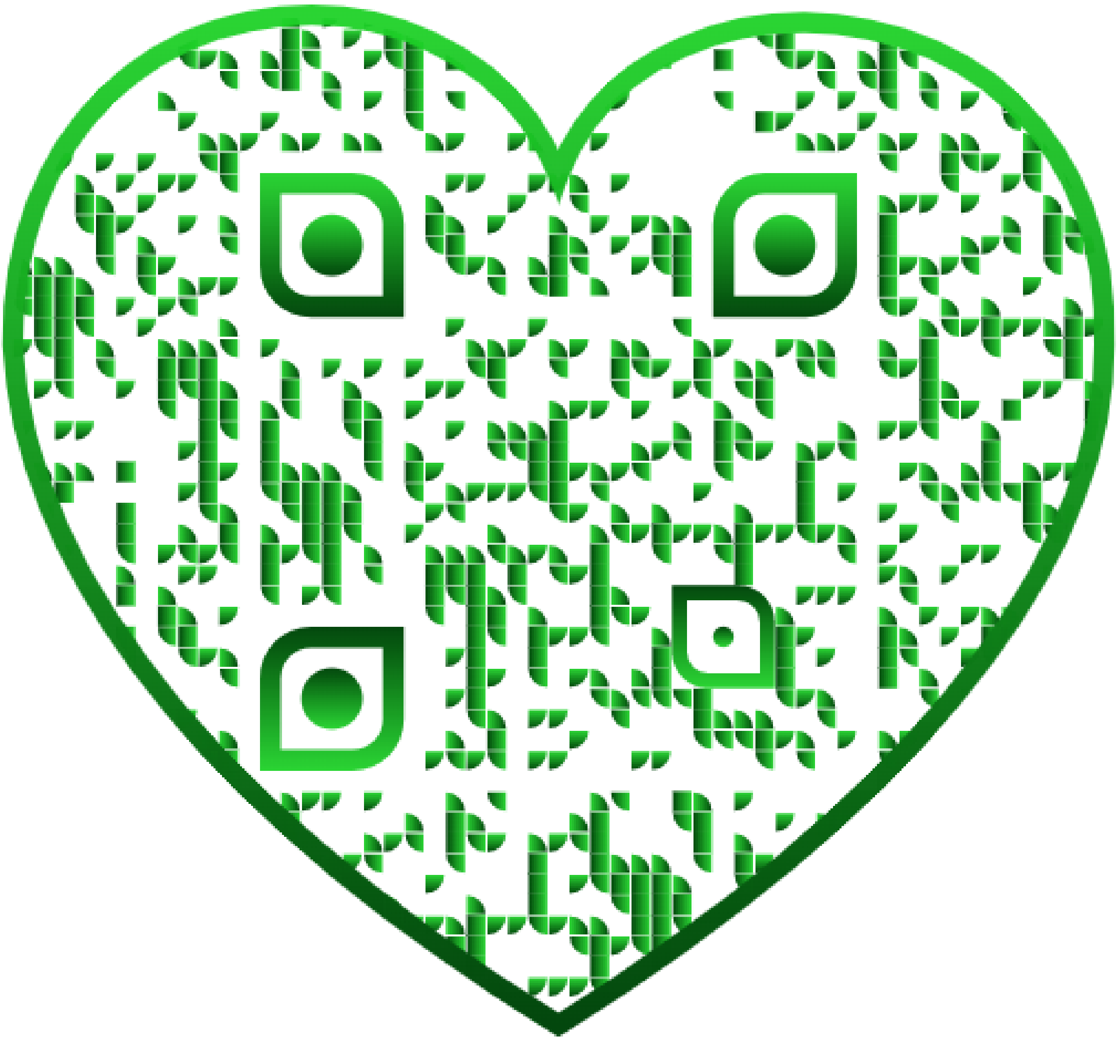
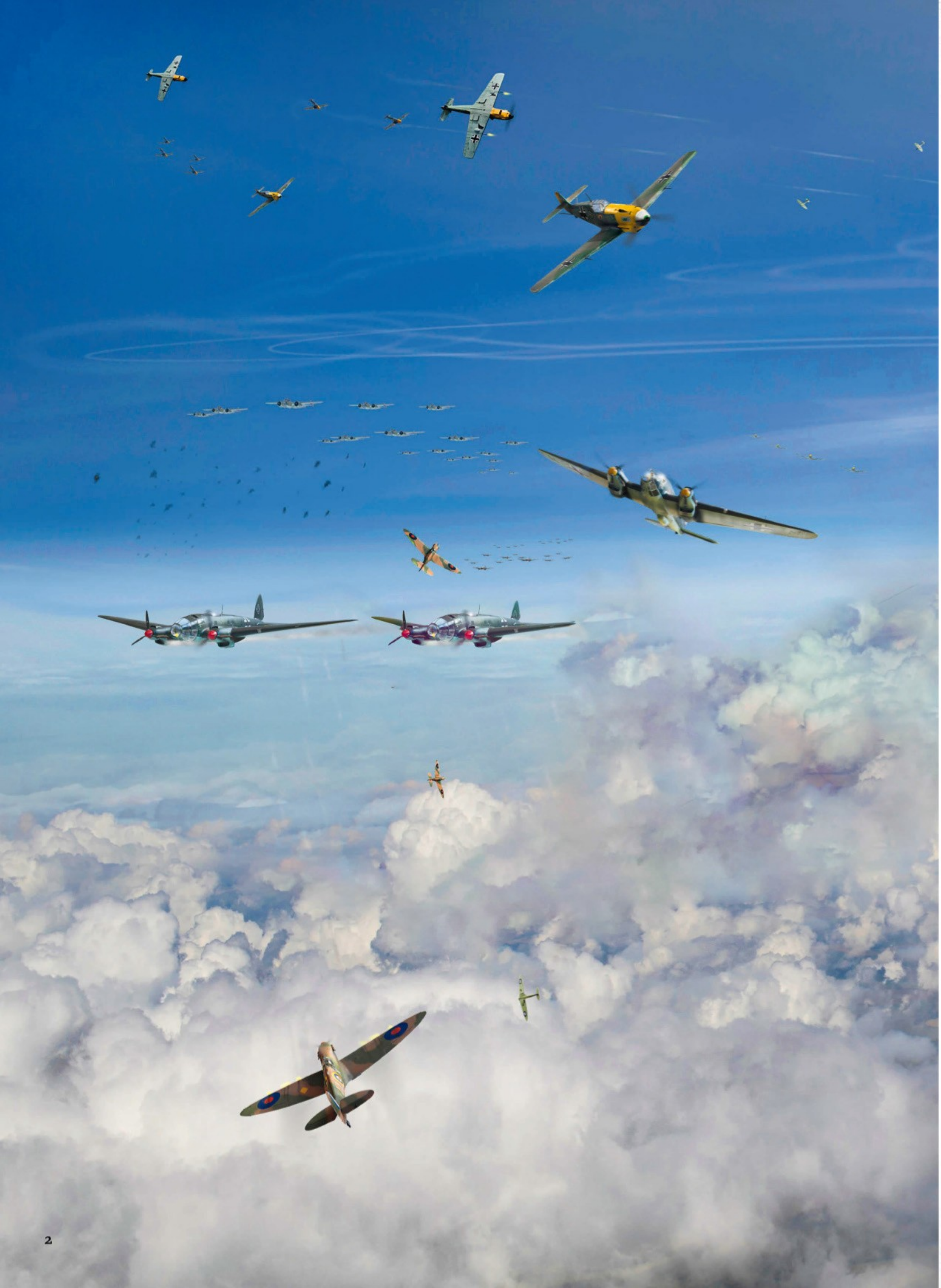




WELCOME

Britain's finest hour

In the summer of 1940, darkness was falling over Europe. The Soviet Union had formed an unholy alliance with Nazi Germany. Norway was all but occupied. And France would soon be overrun by Germans. In July, only Great Britain remained as the last defence against a Europe under the swastika's brutal arms.

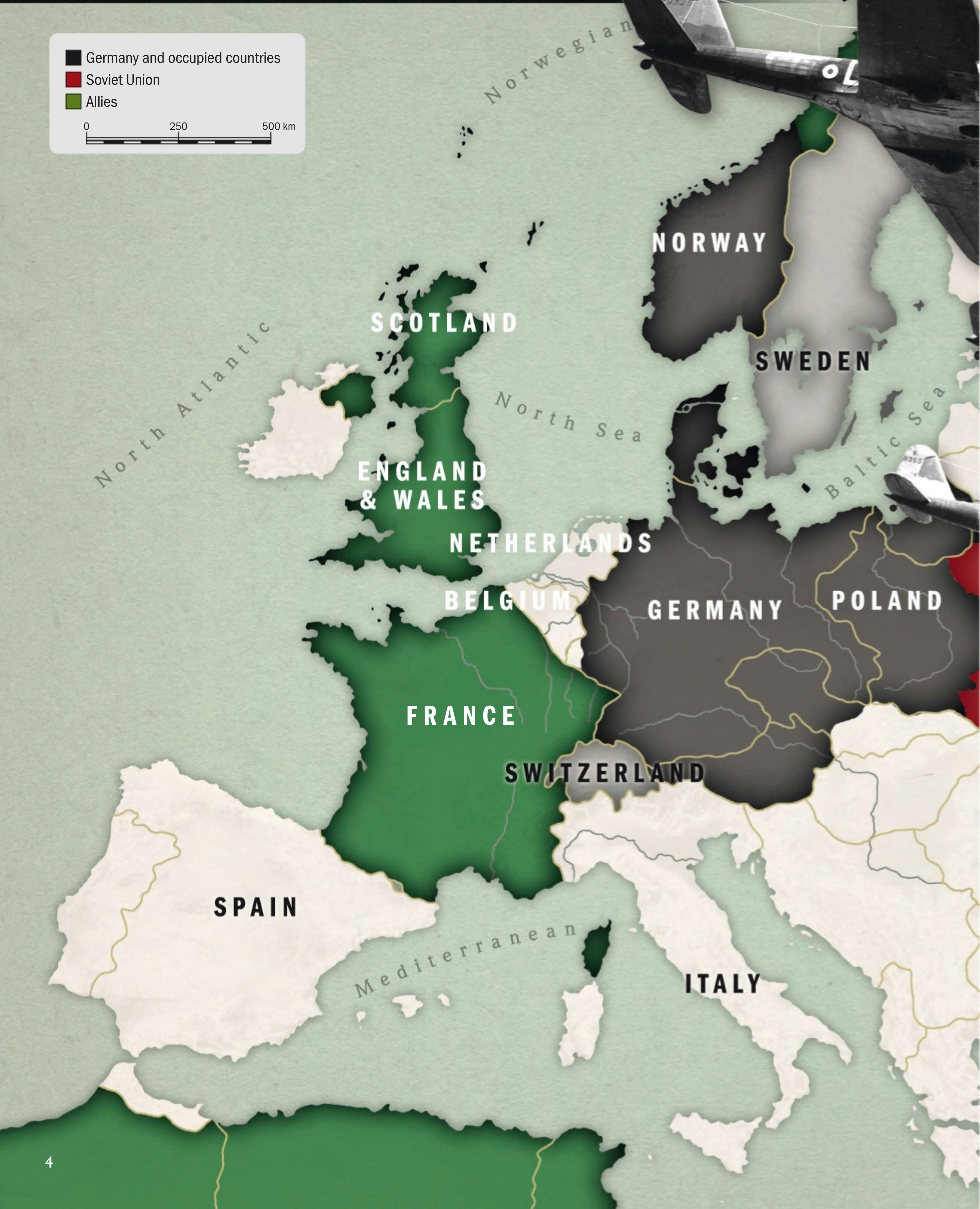
But Britain was no longer the invincible empire that had subjugated more than a fifth of the Earth's landmass over the previous 400 years, and the Battle of Britain would prove to be the British Empire's last moment of glory.

Led by Winston Churchill, the British rediscovered the virtues that had made a humble people the rulers of the world. Ingenuity, resourcefulness and – above all – indomitable courage enabled the Royal Air Force to take on the Luftwaffe and hold off the Germans.

In June 1940, Winston Churchill called the battle Britain's "finest hour", and he was right. The British Empire would not survive for long after World War II, but the Battle of Britain was its magnificent swansong, and the thousands of British lives lost saved Europe from Nazi tyranny.

Enjoy the drama!

EUROPE – May 1940


⬛ Germany and occupied countries
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BELGIUM
GERMANY
POLAND
FRANCE
SWITZERLAND
SPAIN
ITALY

CONTENTS

The Battle of Britain

The Fall of France
German troops burst across the border into France, reaching the English Channel in just ten days. Ahead of them lay Dunkirk and hundreds of thousands of terrified Allied soldiers, all requiring evacuation. **Page 6**

The plan to occupy Britain
After Dunkirk, Hitler began preparations to invade Britain. During Operation Sealion, 260,000 German troops would occupy the country from the south and impose a military dictatorship. **Page 26**

RAF gambled on bombing the enemy
It wasn't until the late 1930s that the British began to seriously invest in a new air force, concentrating in particular on long-range bombers. At the outbreak of war, defeat in the air was a real possibility. **Page 38**

Battle of Britain
To clear the way for an invasion, the Luftwaffe bombed British airbases. British pilots found themselves engaging in fierce dogfights up to five times a day in a battle that nearly brought the RAF to its knees. **Page 42**

"The attack came on a beautiful Sunday"
Rae Helen Bark experienced the London Blitz first hand. Read her eyewitness account of the German attacks. **Page 64**

Radar won the war
The British had one trump card in the Battle of Britain. A British engineer developed a brand-new early warning system that tracked enemy aircraft using radar beams before they reached the British Isles. **Page 66**

Britain strikes back
Not a single bomb would hit Berlin, Hermann Göring promised. But the Luftwaffe commander was forced to eat his own words when British bombers attacked the German capital. **Page 78**

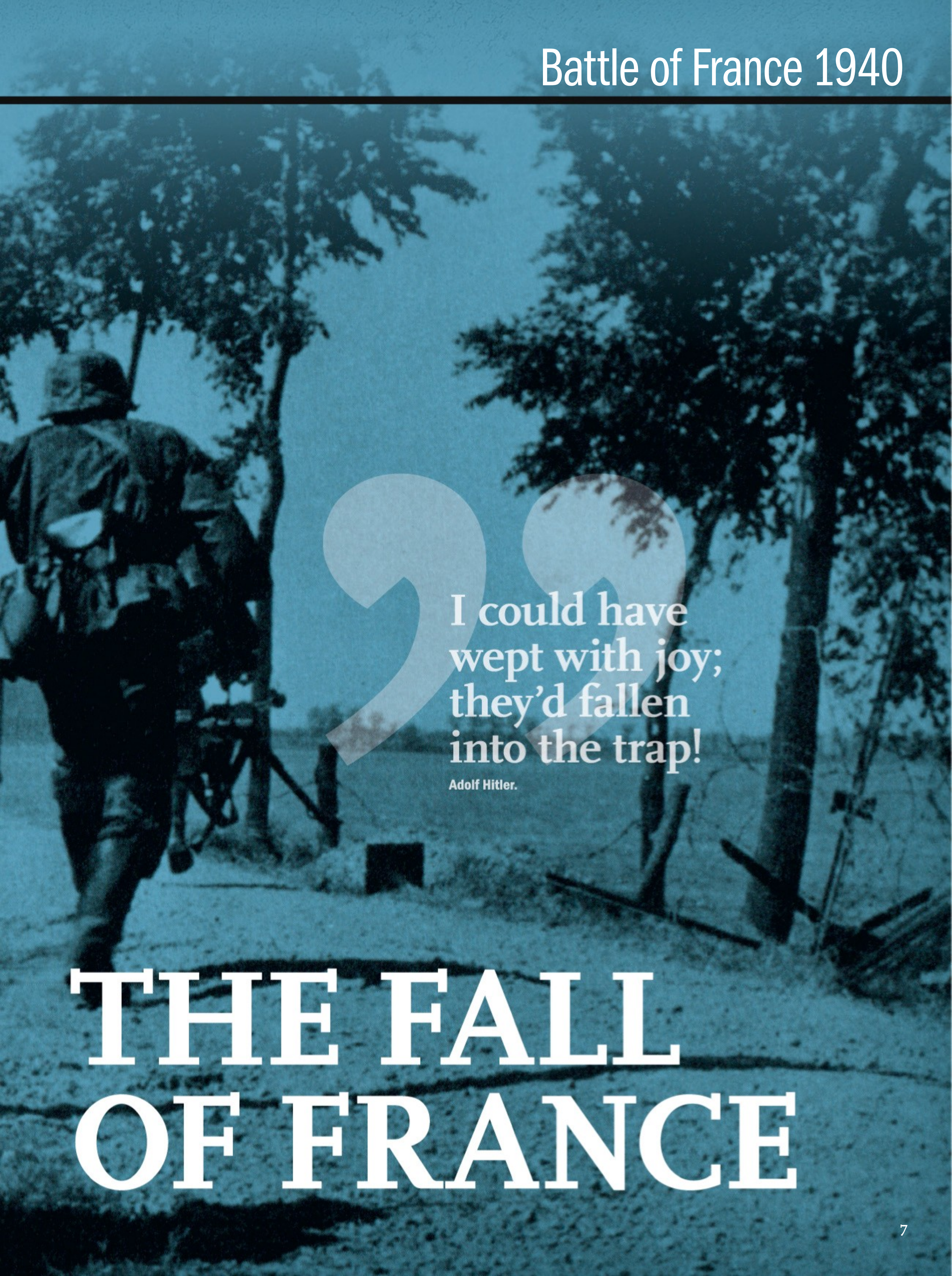
"I put the plane into a panic power dive"
Colin Bell took part in the British bombing raids on Germany. Raids on Berlin were particularly sought-after, but also deadly. **Page 90**

Blitz over London
As the sirens wailed over London on 7th September 1940, it marked the start of 57 consecutive nights of German bombs raining down on the capital. Each night, the city's terrified inhabitants battled for their lives. **Page 92**

Just 3,000 British pilots *formed the last line of defence against a Nazi-occupied Europe.*

SOVIET UNION
Black Sea

To the surprise of the French, *the German offensive roared through the Benelux countries and bypassed the defences on the Franco-German border.*



> I could have wept with joy; they'd fallen into the trap!
>
> **Adolf Hitler.**

THE FALL OF FRANCE

The Fall of France

In 1940, France had the world's strongest army and a bulwark of bunkers protecting its border with Germany. It was unthinkable that its defences would collapse in weeks – but France hadn't reckoned on two German generals, Guderian and Rommel, who had studied Napoleon and developed a new tactic: blitzkrieg.

By Mette Iversen

Darkness covered the Eifel mountains in western Germany as Hitler's war machine began rolling towards the Luxembourg border on the night of 10th May 1940. Greater in number than ever before, armoured cars, vehicles and foot soldiers moved over the ridges to the west.

"Every hour that goes by, it becomes more lively on the approach roads, more and more troops quartered here in the Eifel are getting underway. We overtake marching, riding and driving columns. The noise of the motors gets on one's nerves in this night of uncertainty. The drivers must exert the utmost powers of vision, so as not to end up in the roadside ditches. It's pitch dark ... We realise why we came here so often to carry out peace-time operations," a soldier reported.

So far, only the army's top brass knew the plan and scope of the operation, code-named *Fall Gelb* (Case Yellow), which the generals had just launched. But when the 1st Panzer Division led by General Heinz Guderian crossed the border into Luxembourg at 04.30, no one was in any doubt: the Germans' enemies to the west would be defeated.

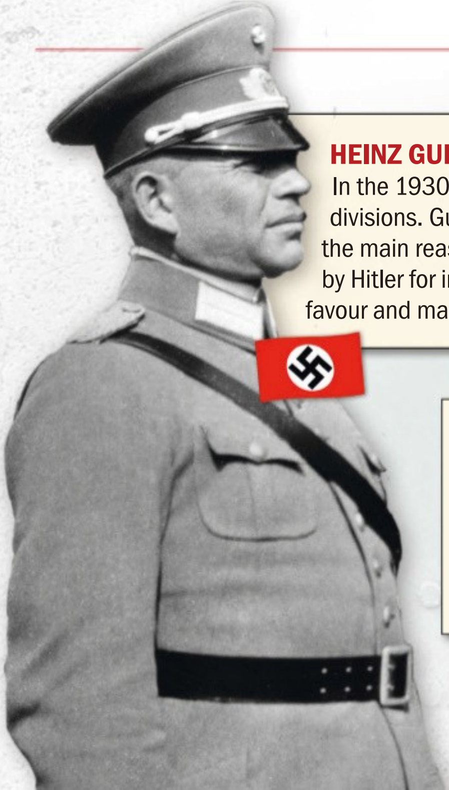
A number of Third Reich soldiers were already in Luxembourg, disguised as innocent tourists, sabotaging lines of communication and keeping the roads clear for the invasion force. Luftwaffe pilots moved through the air, not even having had time to shave when commanders had woken them in the early hours of the morning and ordered them to prepare for the operation. As day dawned, bombers howled over Luxembourg, the Netherlands, Belgium and France, dropping their explosives over key roads, railway stations and military bases. The bombs destroyed six of the 18 aircraft that the Royal Air Force's 114 Squadron had based at Conde-Vraux, halfway between the French border and Paris.

From the air, the Luftwaffe pilots could look down on the spectacular sight of the new German Army in motion. Somewhere between 1,200 and 1,500 German tanks rumbled along on caterpillar tracks, flinging up dust on the small roads. Never before had so many tanks taken part in an attack at the same time, and German General Günther Blumentritt enthusiastically described the procession:

"Like a giant phalanx, they stretched back for a hundred miles ... Had this mass formation of Panzers been placed in single file, the tail-end would have been in Königsberg, in East Prussia, and the head of the column in Trier."

Guderian studied Napoleon

The Allies were unprepared when Germany attacked the Benelux countries on 10th May 1940 and opened the gates to France. They were caught napping, both



HEINZ GUDERIAN (1888-1954)
In the 1930s, the general helped build Germany's new panzer divisions. Guderian's successful blitzkrieg attack into France is one of the main reasons for the French collapse. In 1941, he was dismissed by Hitler for insubordination, but in 1943 the Führer restored him to favour and made him responsible for the Atlantic Wall fortifications.

ERWIN ROMMEL (1891-1944)
A veteran of World War I, the field marshal understood the importance of rapid attacks. After victory in France, he served in North Africa, among other places. In 1944, Rommel was implicated in a failed coup against Hitler and was forced to commit suicide.

German engineers *could build pontoon bridges in a matter of hours. This allowed the army to cross France's rivers quickly.*

figuratively and literally. Not only did the soldiers attack at dawn but the Germans had also kept the plans so close to their chest that not even the divisions' own officers knew the time of attack until the last minute. Moreover, the assault was not carried out as the Allies would have expected, but by using Germany's new pioneering tactic, blitzkrieg, developed by General Heinz Guderian.

The 41-year-old officer had been horrified how World War I had degenerated into an exhausting war of attrition, where the front didn't move and a single man with a machine gun could wipe out hundreds of advancing infantry. Inspired by Napoleon's dictum that *"the art of war consists, with an inferior army, of always having more forces than your enemy at the point where you attack"*, Guderian devised a strategy whereby the army would exert its full force at a selected point, take the enemy by surprise, penetrate its defensive lines, then proceed on to the next attack.

Before then, tanks had mostly acted as scattered support for the infantry, but in Guderian's war plans, massive columns of newly developed fast tanks would play a key role in the advance. As a further innovation in German war strategy, the Luftwaffe, which had fought its own battle for air supremacy during WWI, was now to cooperate with the armoured divisions by supporting the advance from the air and bombing enemy defensive positions and strategic hubs. Finally, Guderian insisted that all tanks be equipped with radios so that attacks could be coordinated quickly and effectively. The French had not thought that far ahead, therefore their tanks rarely carried radios, so when officers needed to give orders, they had to walk or ride with messages from vehicle to vehicle.

Invasion force found easy way in

From Luxembourg, Hitler's war machine swept on into Belgium and the Netherlands, which were captured primarily from the air. However, the invasion of the Benelux countries was only the first step in Germany's plan. The small countries were merely a shortcut, which the Germans used to bypass the almost impenetrable Maginot Line built by France along its border with Germany, thus securing almost unrestricted passage into France.

Throughout the 1930s, France had constructed the Maginot Line as a defensive structure, consisting of ▸

Had this mass formation of Panzers been placed in single file, the tail-end would have been in Königsberg and the head in Trier. ■ **Günther Blumentritt, German general.**

Equipment and weapons *were captured from the French. Their tanks were used in the Soviet campaign a year later.*

FACTS

In numbers alone, two evenly matched armies clashed in the Battle of France.

3.35 million

soldiers were mustered by the Germans, while the Allies deployed

3.3 million

soldiers.

heavy fortifications along its entire border with Germany, as well as a less fortified section on France's northern border with Luxembourg and Belgium out towards the English Channel. The defensive line was a combination of bunkers, gun emplacements, reinforced machine gun positions and underground fortifications. According to France's knowledge of warfare, the line was impregnable, so there was no plan B in case the enemy broke through.

But that's what the Germans did, while British and French soldiers were busy in the Benelux countries. Indeed, the coalition of French and British forces reacted exactly as Hitler's generals had hoped when it became clear that the German armoured divisions were on their way through the Netherlands and Belgium. In a panic, the Allies sent virtually all their troops and equipment north to counter-attack in Benelux, leaving the Maginot Line weakened.

"I could have wept for joy; they'd fallen into the trap! It had been a clever piece of work to attack Liége," Hitler exulted on 10th May 1940.

The French had indeed fallen into the trap, and other German armoured divisions were advancing through the Ardennes, ready to enter France at Sedan, one of the Maginot Line's key points.

Rommel crossed important river

The diversionary tactics had worked so well that the *New York Journal-American* wrote, *"It seems that the Germans are not interested in France this time,"* when the paper appeared on 13th May 1940.

The writer was wrong. While the paper was going to press on the other side of the Atlantic, German General Erwin Rommel, at the head of the 7th Panzer Division, was crossing the fortified River Meuse at the Belgian town of Dinant near the French border. As a lieutenant in World War I, Rommel had experienced swift, daring operations behind enemy lines. He was a risk-taking warrior, unafraid to take matters into his own hands. The rumour was that, like a cat, he had nine lives. Rommel continued his daring style in World War II as one of Hitler's most trusted and valued generals, who gladly took up a gun to lead his troops through mud and darkness like any non-commissioned officer.

If Rommel was a cunning, quick-witted cat, ready to adapt to any situation, his counterpart across the river, the French General André Corap, was a stubborn mule who didn't give a damn about modern, mechanised lightning warfare. But Corap was soon to learn the hard way just how quickly Rommel's soldiers could advance over ditches, barricades and, using rubber boats and pontoons, rivers such as the Meuse. When Rommel came across Corap's soldiers on the river on 13th May, the German general was playing for high stakes.

"I now took over personal command of the 2nd Battalion of the 7th Rifle Regiment and for some time directed operations myself. With Lieutenant Most, I crossed the Meuse in one of the first boats and at once joined the company which had been across since early morning. From the company command post, we could see Companies Enkefort and Lichter were making rapid progress. I then moved up north along a deep gully to Company Enkefort. As we arrived, an alarm came in: 'Enemy tanks in front.' The company had no anti-tank weapons, and I therefore gave orders for small arms fire to be opened on the tanks as quickly as possible."

Rommel gambled and, as luck would have it, his modestly equipped infantry managed to mount such a ferocious attack the French tanks turned and fled, while the enemy infantrymen came creeping forward to lay down their arms. Rommel immediately ordered his engineer troops to clear a path across the river.

"A company of the engineer battalion was busily engaged in building eight-tonne pontoons, but I stopped them and told them to build the 16-tonne type. I aimed to get part of the Panzer Regiment across as quickly as possible."

Although the engineers worked furiously in the baking sun on the 110-metre-wide river, they only managed to secure passage for a few tanks during the night of 14th May. The next morning, just 15 tanks from the 7th Division stood on the west bank of the Meuse, forming an exposed spearhead. While the engineers toiled, French General Corap tried to rally forces from his 9th Army to drive the Germans back across the Meuse, but his lines of communication failed and the general hesitated to act, unable to form an overview of the situation. The counter-attack was therefore postponed several times and, apart from a half-hearted sortie, the French remained paralysed long enough for Rommel's forces to establish a major bridgehead stretching for several kilometres along the western bank of the river.

Sedan was France's last hope

Alongside Rommel's advance, Guderian was busy coordinating a major blitzkrieg battle further south along the Meuse, where four armoured divisions were to cross the river and invade the area around the French town of Sedan, north-west of the most heavily guarded part of the Maginot Line. The XIX Panzer Corps was to advance at Sedan, the 2nd Panzer Division at Donchery, the 1st Division north of Sedan at the suburb of Glaire, and the 10th Division just south of Sedan. Ahead of the tanks, elite troops of the Infantry Regiment Großdeutschland and storm troopers were to cross the river and establish a bridgehead on the west side of the Meuse, while the Luftwaffe was to attack from above. If the ▸

HOW...

...Hitler's blitzkrieg worked

Speed, concentrated force and surprise were the key ingredients of Nazi Germany's effective blitzkrieg. The tactic revolutionised modern warfare and prevented a repeat of World War I's frozen fronts.

With World War I's stagnant trench warfare as a backdrop, General Heinz Guderian developed a new form of warfare that relied on rapid surprise attacks with carefully coordinated cooperation between tanks, artillery, infantry and, of course, the air force.

The tactic, called blitzkrieg, involved concentrating as much force as possible in huge, rapid attacks on selected points – rather than attacking across a broad front, as in World War I – then advancing quickly once victory was assured. If the attack was overwhelming enough, the enemy had no option but to surrender.

Bombers began the attack by dropping explosives on enemy defences and lines of communication. After an exhausting, devastating and not least demoralising bombing raid, tanks advanced through the weakest link in the enemy line. When the tanks broke through enemy defensive positions and then attacked the field headquarters, the infantry could advance, engage and surround the enemy soldiers. Communication was essential to carry out the coordinated attacks. All tanks were therefore equipped with radios – both to communicate between the tanks and with headquarters, and to call in air support. Delay was blitzkrieg's Achilles heel. If the armoured divisions hesitated, the enemy would have time to surround parts of the German army.

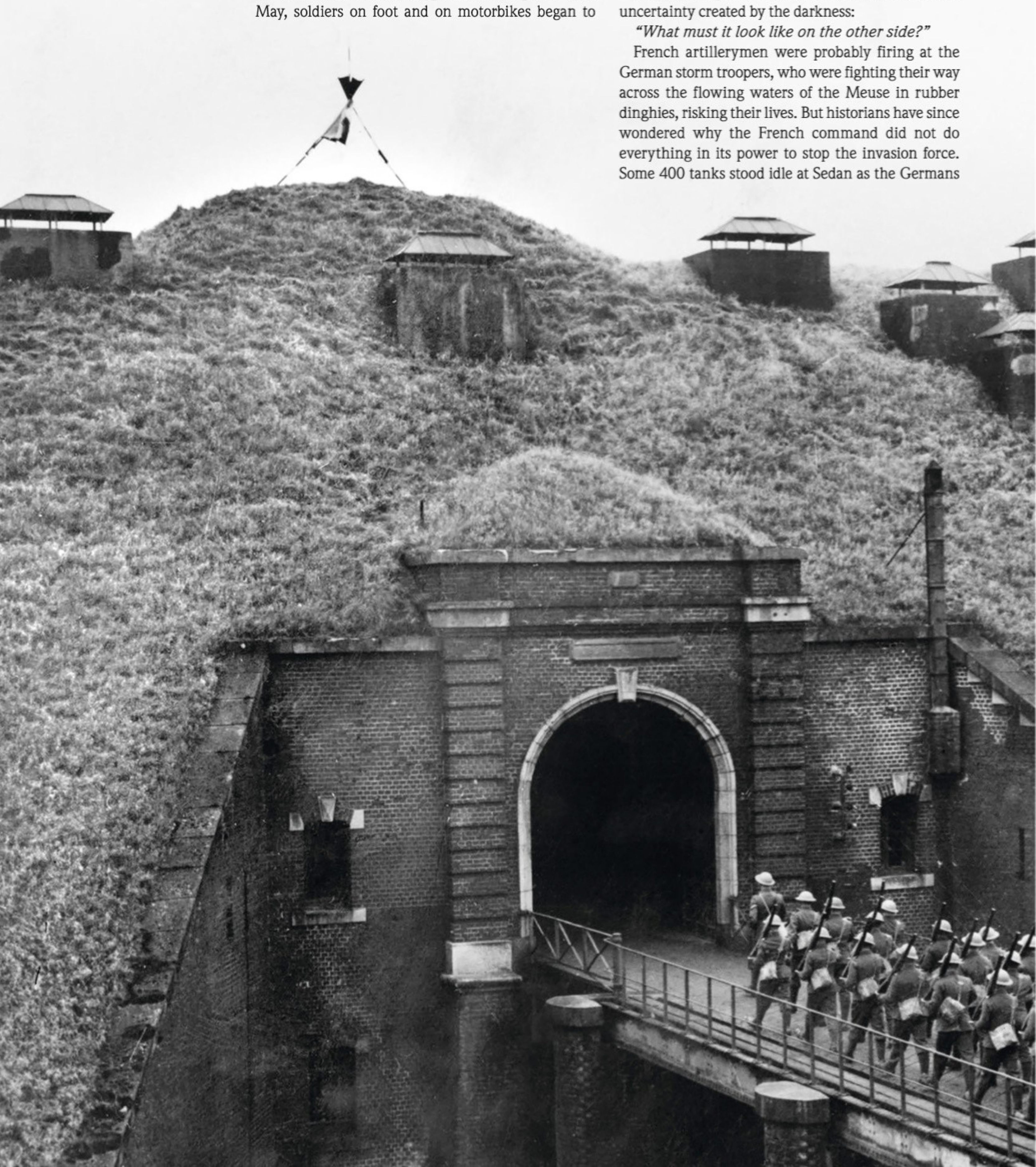
Speed was of the essence *in blitzkrieg. That's why German tanks were developed with powerful engines and light armour, which kept the weight down.*

Meuse could be crossed, all of western France would be open, and the success of the invasion depended on the German soldiers tasked with fighting their way across the river. At midnight on the night of 13th May, soldiers on foot and on motorbikes began to approach the river between trees, through the knee-high grass of the meadows and past bomb craters, while the French opened fire from across the river.

German Sergeant Wilhelm Prümers recalled the uncertainty created by the darkness:

"What must it look like on the other side?"

French artillerymen were probably firing at the German storm troopers, who were fighting their way across the flowing waters of the Meuse in rubber dinghies, risking their lives. But historians have since wondered why the French command did not do everything in its power to stop the invasion force. Some 400 tanks stood idle at Sedan as the Germans



13/5 Germans cross the Meuse and are in France. Soon after, panzer troops penetrate deep into the country.

26/5 Allies are trapped in a pocket by the sea. A major rescue operation is launched and over 300,000 troops are taken to England.

22/6 On 22nd June, France officially lays down its arms in the war against Germany. A few days later, it also surrenders to Italy.

advanced. It's possible that French General Claude Grandsard was afraid to waste ammunition, or that his inaction was due to a simple error of judgement, as evidenced by his comment to a colleague.

"The enemy would be unable to do anything for four to six days, because it would take them this long to bring up heavy artillery and ammunition and to position them," Grandsard told General Henri-Jean Lafontaine.

Grandsard clearly underestimated both the German soldiers and, especially, the Luftwaffe. The Stuka – or Junkers Ju 87, as the model was properly called – was the ace of blitzkrieg, and with wind sirens screeching a warning, Stukas howled in over the border region around Sedan.

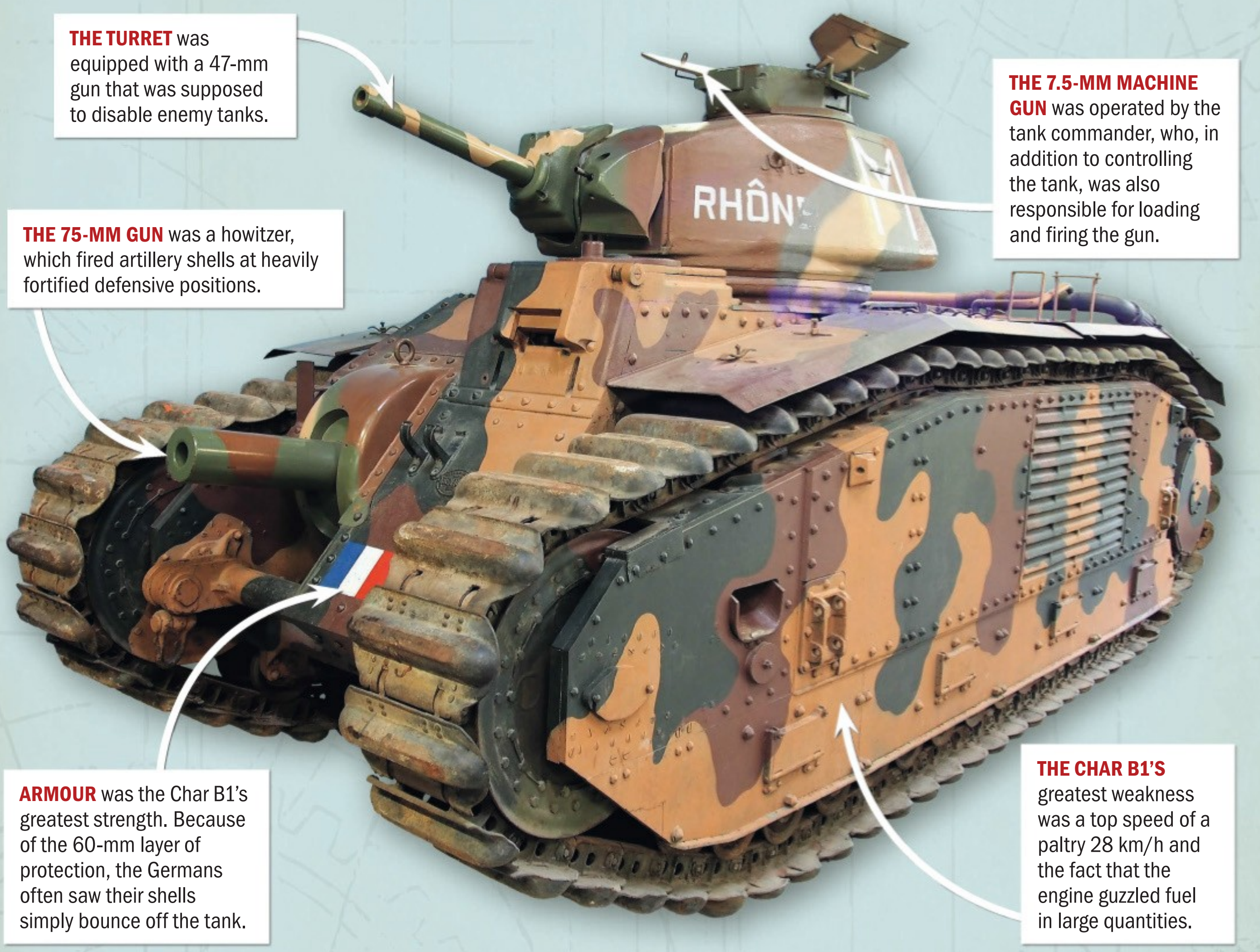
From 07.00 until late in the afternoon of 13th May, 250-kilogram German bombs rained down on communication lines and French artillery. Lieutenant General Bruno Loerzer and Major General Wolfram von Richthofen, who led the attack, ordered Stukas into the air with increasing intensity, and columns of smoke and dust from the explosions rose at shorter and shorter intervals. The Stukas operated in three groups of 40 aircraft each. The first group rose to a height of one and a half kilometres and plunged towards the target. Meanwhile, the second group ▸

France was protected *by the enormous Maginot Line. Here, French command hoped, the Germans would be halted.*

Outdated tank came up short

With its powerful gun and thick armour, the French Char B1 tank was a formidable foe for the German attackers. However, when the tank went into battle, it proved to be useless.

The development of the Char B1 began in the early 1920s. General Jean Estienne had been tasked with creating a French armoured force, and to that end, he called for a tank capable of disabling both enemy defences and tanks. However, the development of the tank encountered several obstacles and was many times more expensive than expected. By the time production of the Char B1 finally got under way in the 1930s, the tank was already obsolete, and the Char B1 had a top speed of just 28 km/h – extremely slow compared to German tanks. This fact became embarrassingly clear to the French in their first encounter with the German panzer divisions.



THE TURRET was equipped with a 47-mm gun that was supposed to disable enemy tanks.

THE 7.5-MM MACHINE GUN was operated by the tank commander, who, in addition to controlling the tank, was also responsible for loading and firing the gun.

THE 75-MM GUN was a howitzer, which fired artillery shells at heavily fortified defensive positions.

ARMOUR was the Char B1's greatest strength. Because of the 60-mm layer of protection, the Germans often saw their shells simply bounce off the tank.

THE CHAR B1'S greatest weakness was a top speed of a paltry 28 km/h and the fact that the engine guzzled fuel in large quantities.

hung at an altitude of just over three kilometres and prepared to bomb the targets that the first group had missed. A third group took on specific, isolated targets. At the same time, Messerschmitt aircraft moved through the air to protect the dive-bombers.

From the ground, a German lieutenant peered up, fascinated, at the swarms of Stuka in the sky:

"Three, six, nine, oh, behind them still more, and further to the right aircraft, and still more aircraft, a quick look in the binoculars – Stukas! And what we are about to see during the next 20 minutes is one of the most powerful impressions of this war. Squadron upon squadron rise to a great height, break into line ahead and there, there the first machines hurtle perpendicularly down, followed by the second, third – ten, 12 aeroplanes are there. Simultaneously, like some bird of prey, they fall upon their victim and then

release their load of bombs on the target. We can see the bombs very clearly.

"It becomes a regular rain of bombs that whistle down on Sedan and the bunker positions, Each time the explosion is overwhelming, the noise deafening. Everything becomes blended together; along with the howling sirens of the Stukas in their dives, the bombs whistle and crack and burst … We stand and watch what is happening as if hypnotised; down below all hell is let loose! At the same time, we are full of confidence … and suddenly we notice that the enemy artillery no longer shoots … while the last squadron of Stukas is still attacking, we receive our marching orders."

French soldiers received no air support

On the French side, the generals complained about their situation to their superior, General Charles Huntziger, asking for air and anti-aircraft reinforcements, but Huntziger dismissed their plea, saying: *"They must receive a baptism of fire."*

The French soldiers in Sedan's defences, however, were by no means prepared for such an ordeal. Instead of aiming their guns at the threat from the sky, the terrified men tried to save their own lives.

"The gunners stopped firing and went to ground, the infantry cowered in their trenches, dazed by the crash of bombs and the shriek of the dive-bombers; they had not developed the instinctive reaction of running to their anti-aircraft guns and firing back. Their only concern was to keep their heads well down. Five hours of this nightmare was enough to shatter their nerves, and they became incapable of reacting against the enemy infantry," said French General Ruby of his beleaguered soldiers.

It was not until late in the morning that French pilots were finally ordered to come to the rescue, but by then the balance of power in the air weighed heavily in the German favour.

"Between 10.00 and 11.00, a three-plane patrol flying over the area Carignan-Sedan runs into 50 enemy bombers protected by 80 Messerschmitts," noted a French pilot in his squadron's log.

The Luftwaffe could therefore easily clear the way for German vehicles to tow guns to the riverbank. Soon after, they too began bombarding the French positions. The trembling soldiers in the machine-gun emplacements, however, had not yet seen the Germans' most fearsome weapon. In the wake of lighter artillery fire, the heavy guns now rolled out; "88" was not just the gun's nickname – the number also indicated the diameter of the barrel in millimetres. Smoke, dust and shrapnel blinded the French soldiers, while positions were shaken at best, crumbled at worst, as the Germans fired their 88s.

When the howling sirens of the Stuka finally died down around 15.00 on 13th May, the Germans began ferrying soldiers in rubber boats across the Meuse, which at Sedan measured about 50 metres from bank to bank. Despite the bombardment by the Stukas, there was still life behind the debris in the French machine-gun positions, and among the Germans' first ranks, many men had to give their lives on the banks or during the crossing. Sergeant Schulze of the 10th Panzer Division described the advance:

"To begin with, we move forward well; the meadow is wet, finally we are wading up to our calves through the water, here and there shots fly over our heads. Barbed wire is cut through, and we move on ahead. In the next second, everything breaks loose. Machine-gun bursts whistle over us, there are strikes before, near and behind us. The enemy is shooting well. Under this fire it is impossible for anybody to get forward. The least movement … brings the fire down anew. We are lying in the water, we hug the ground very close, and are delighted when a particularly high grass hummock keeps us out of sight of the enemy."

Near the centre of Sedan, elite soldiers of the Infantry Regiment Großdeutschland celebrated their successful crossing of the Meuse, covered by heavy artillery. At a machine-gun emplacement hidden in a barn, the elite troops found a supply of soft drinks, which they cheerfully opened to quench their thirst. Earlier, the soldiers had forced French soldiers out of the barn with hand grenades. Senior Lieutenant von Courbiere rejoiced at the enemy's speedy surrender:

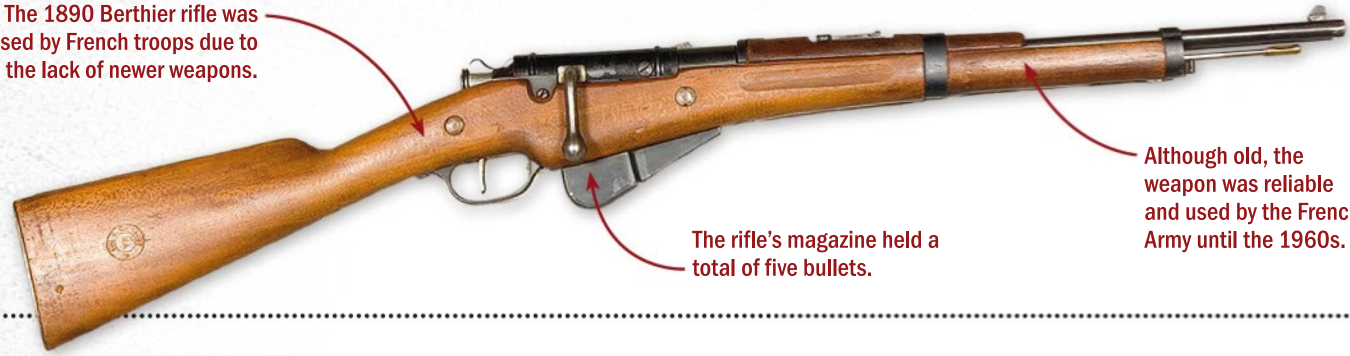
"The enemy are smoked out by hand-grenades; they are completely vanquished; they come out. Their faces reveal the psychological strain of this fighting. Close to each other they stand with their backs to their bunker and raise their hands; 'Tirez!' *['We surrender!'] they cry."*

Hitler's troops had now crossed the Meuse at several points, but establishing a bridgehead on the ►

French farmers *were surprised by the German offensive. In many places, they did not have time to take their animals to safety.*

FACTS

At the same time as the German attack, Italy also invaded France. Mussolini wanted to gain control of the **French part of the Alps,** but the mission failed. At the end of June 1940, the Italians had to be satisfied with a 50-km-wide demilitarised zone on the French side of the border.



The 1890 Berthier rifle was used by French troops due to the lack of newer weapons.

The rifle's magazine held a total of five bullets.

Although old, the weapon was reliable and used by the French Army until the 1960s.

west side of the river was not so straightforward. In the woods near the town of Onhaye, Rommel's 7th Panzer Division was met by shellfire, but the general refused to stop the advance. He jumped into a captured British Mark III tank and continued forward.

"Suddenly we came under heavy artillery and anti-tank gunfire from the west. Shells landed all round us and my tank received two hits one after the other, the first on the upper edge of the turret. The driver promptly opened the throttle wide and drove straight into the nearest bushes. He had only gone a few yards, however, when the tank slid down a steep slope on the western edge of the wood and finally stopped, canted over on its side, in such a position that the enemy, whose guns were in position about 500 yards away on the edge of the next wood, could not fail to see it."

Rommel now asked for support from the air over the radio. Soon after, Luftwaffe planes roared in above Onhaye, and German soldiers were able to take the town and capture a French captain. Rommel had demonstrated how effective blitzkrieg could be and how vital rapid radio communication was.

Meanwhile, the stream of German infantry and artillery continued to cross the Meuse, and the Germans advanced so quickly that Luftwaffe Stukas even accidentally attacked tanks of the 1st Panzer Division, not realising that Guderian's men could already have advanced so far.

French General Menu watched helplessly as his own soldiers lost heart and ran:

"Riflemen and machine-gunners got up and fled, taking with them in their flight those of the artillerymen who had not already beaten them to it, mingled with elements flooding backwards from the neighbouring sector ... by 14.00 there was no one any longer in position."

RAF gave up the fight

As the French defences crumbled, officer after officer was transferred or demoted as punishment for losing their grip on the Maginot Line. Even when the British Royal Air Force launched a massive air attack on Sedan, the Germans' position was not in serious danger. The Luftwaffe sent up 814 aircraft in a counter-attack, while German anti-aircraft guns fired relentlessly at enemy machines. German Captain Kielmansegg observed the air battle from a pontoon bridge over the Meuse:

"Again and again, an enemy aircraft crashes out of the sky, dragging a long black plume of smoke behind it, which after the crash of the succeeding explosion remains for some time perpendicular in the warm air. Occasionally from the falling machines one or two white parachutes release themselves and float slowly to earth ... in the short time that I am at the bridge, barely an hour, 11 planes alone were brought down."

When a plea for further RAF support arrived at Downing Street, the leader of RAF Fighter Command, Marshal Hugh Dowding, stood up and grabbed a piece of paper. Pale-faced, the marshal drew Prime Minister Winston Churchill a downward curve showing how the number of British fighters would decline if they sent more to the front. By the tenth day, every Hurricane would be gone, he calculated.

Churchill solemnly studied the graph and the Cabinet immediately resolved not to send any more Hurricanes to Sedan. Hitler's armoured divisions could now move on into France without encountering significant resistance. In the hills around the town of Thélonne, Sergeant Schulze witnessed the exit of the French soldiers:

"We found their artillery positions left as if they had fled. Some of the guns were still loaded; the enemy had not had time to render them unserviceable."

The army's bridgehead on the west bank of the Meuse was now secured, and Heinz Guderian prepared to take a decisive step: the armoured divisions would advance the next day and fight their way to the west coast of France at the English Channel. In this way, the Germans would divide the Allied forces in two – one part in France and one part in the Benelux countries – and thus cut the enemy's supply line.

The only concern was that Luftwaffe intelligence had observed French reinforcements heading south

> **Riflemen and machine-gunners got up and fled, taking with them in their flight artillerymen.** ■ **French General Menu.**

towards Sedan. But Guderian was confident that the 10th Panzer Division, along with the Infantry Regiment Großdeutschland, would be able to hold off the French from the south while the rest of the armoured divisions continued west.

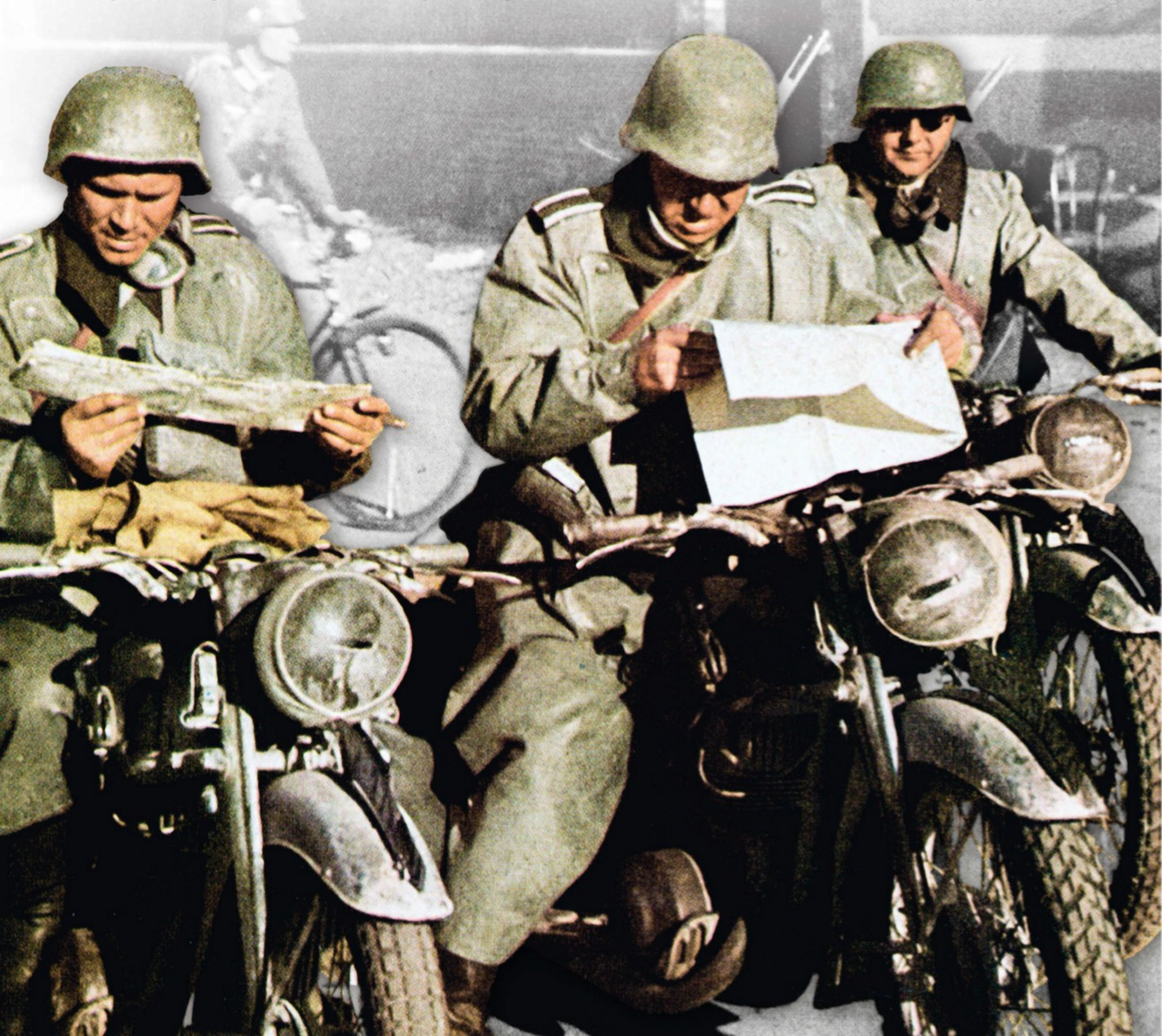
As the general drove back towards his headquarters on the east side of the Meuse to prepare for the next day's advance, he crossed a ridge from which he looked out over the countryside that his forces had captured in just a few days.

"As I looked at the ground we had come over, the success of our attack struck me as almost a miracle," Guderian recounted of the successful crossing of the Meuse and capture of Sedan.

At 02.00 on 15th May, French General Corap telephoned his superior, Billotte. Over the telephone line, Corap announced that he intended to withdraw the troops of the 9th Army from the Belgian section of the Meuse. Billotte supported Corap's defensive tactics, but asked the general to establish a new line of defence behind the French border. When the generals rang off, they had an agreement to withdraw, but no plan for how the 9th Army would defend the new line. And once again, the French army bungled communications, so that different corps received different messages, while others were told nothing.

To add to the problems, another communications error caused a convoy of tankers carrying fuel for French tanks to be sent in the wrong direction.

Rommel could hardly believe his eyes when he saw the enemy set fire to its own tanks and flee instead of fight. But the French forces had run out of fuel and ▸



Maps were studied diligently *by German soldiers, who were moving so quickly into France that the scouts had difficulty keeping up.*

While civilians fled, *the British tried to come to the aid of the French, but the two great powers were no match for the well-oiled German military machine.*

could not continue. Instead of defending France, Brigadier General Bruneau now asked for protection from the air to retreat further. After the French withdrawal, Rommel's 7th Panzer Division was able to sweep into a vacuum of undefended ground, and by the afternoon of 15th May, his troops had crossed the new French defensive line, where Corap's men had not even had time to take up positions. Along the way, the Germans met scattered resistance, but still more French soldiers came crawling out of the brush and buildings and laid down their arms in surrender.

From his armoured car, Rommel rejoiced. But the blitzkrieg had taken its toll on his soldiers, who hadn't had a night's sleep since the invasion began. One of his panzer commanders described the exhaustion of more than a week's continuous fighting:

"I'm dead tired; two days and three nights, not a moment of rest, food consists of two slices of bread, a hellish thirst. Next day we are to have a rest. The vehicle badly needs a service, wire has wound itself around the drive wheel, and the batteries are run down ... We look like pigs, muddy, sticky and without a shave for several days. I am tottering with fatigue and have to help myself with Pervitin tablets [amphetamines]. The radio operators can only be kept awake with difficulty."

Rommel, in his war lust, was unstoppable, however, and ordered the panzer division on to the west. When the Germans encountered a corps of French soldiers on motorcycles on the road, the French were so surprised to see the enemy that most of them drove into a ditch in embarrassment. So fast did the Germans advance that even the Nazi leadership began to get cold feet at the speed. Hitler ordered the generals to put their foot on the brake and General Ewald von Kleist ordered them to slow down several times. But both Guderian and Rommel knew that blitzkrieg's success was fuelled by speed and surprise. Unless the tanks roared forward at full pelt, the Allies would have time to establish new lines of defence. The panzer generals, therefore, chose to ignore their superiors' orders and continued the blitzkrieg west.

FACTS

Despite an equal number of soldiers, the Germans won an overwhelming victory.

160,000

men were lost by the Germans, while the Allies lost

375,000.

France surrendered

In Downing Street on the morning of 15th May, the telephone woke Winston Churchill.

"I was woken up with the news that Monsieur Reynaud [French prime minister] was on the telephone at my bedside. He spoke in English, and evidently under stress. 'We have been defeated.' As I did not immediately respond he said again: 'We are beaten; we have lost the battle.' I said: 'Surely it can't have happened so soon?' But he replied: 'The front is broken near Sedan; they are pouring through in great numbers with tanks and armoured cars.'"

Sleepily, Churchill assured the desperate prime minister that the Germans would soon run out of ▸

French tanks *often fought singly and were outmanoeuvred by German ones, which attacked in groups.*

supplies and the Allies would send the enemy packing. But Reynaud continued to lament the fact that France was lost and begged Churchill to meet him to discuss the situation.

"The way to Paris lies open. Send all the troops and planes you can," was the plea Churchill received from France that evening.

At 15.00 the next day, Britain's prime minister boarded a plane for Paris. As soon as he landed, Churchill sensed the panic. From his car, which was to take him through the capital to meet Prime Minister Reynaud, he observed that the average man on the street had also lost heart.

"The people seemed listless and resigned, and they gave no sign of the passionate defiance that had inspired the cry 'Ils ne passeront pas!' *['They shall not pass'] in the previous struggle … There were no cheers."*

The meeting with Reynaud, flanked by the French army command, was standing room only, and the gravity of the situation could be felt in the air. The prime minister briefed Churchill on plans to evacuate the government from Paris, but it was not until Churchill asked, *"Where is the strategic reserve?"* that the seriousness of the crisis properly hit him. General Maurice Gamelin replied that no such strategic reserve existed. When Churchill stepped out of the foreign office meeting room at the Quai d'Orsay, officials were already busy burning government documents.

"Clouds of smoke arose from large bonfires, and I saw from the window venerable officials pushing wheelbarrows of archives on to them," Churchill later recalled.

Soon after Winston Churchill's visit, the French received further support from the British in the form of regiments of soldiers and ten squadrons of aircraft – much to Hugh Dowding's chagrin. But the Hurricanes facing the Luftwaffe were like sparrows against a flock of birds of prey.

Allies were surrounded

On the evening of Monday 20th May – just ten days after the start of the blitzkrieg – the smell of salt water hit the nostrils of the Austrian soldiers of Lieutenant Colonel Spitta's battalion of the 2nd Panzer Division. Euphoric, the soldiers filled their lungs with fresh sea air on the coast near Crécy-en-Ponthieu – almost ▸

Germans advanced 320 kilometres in just 10 days

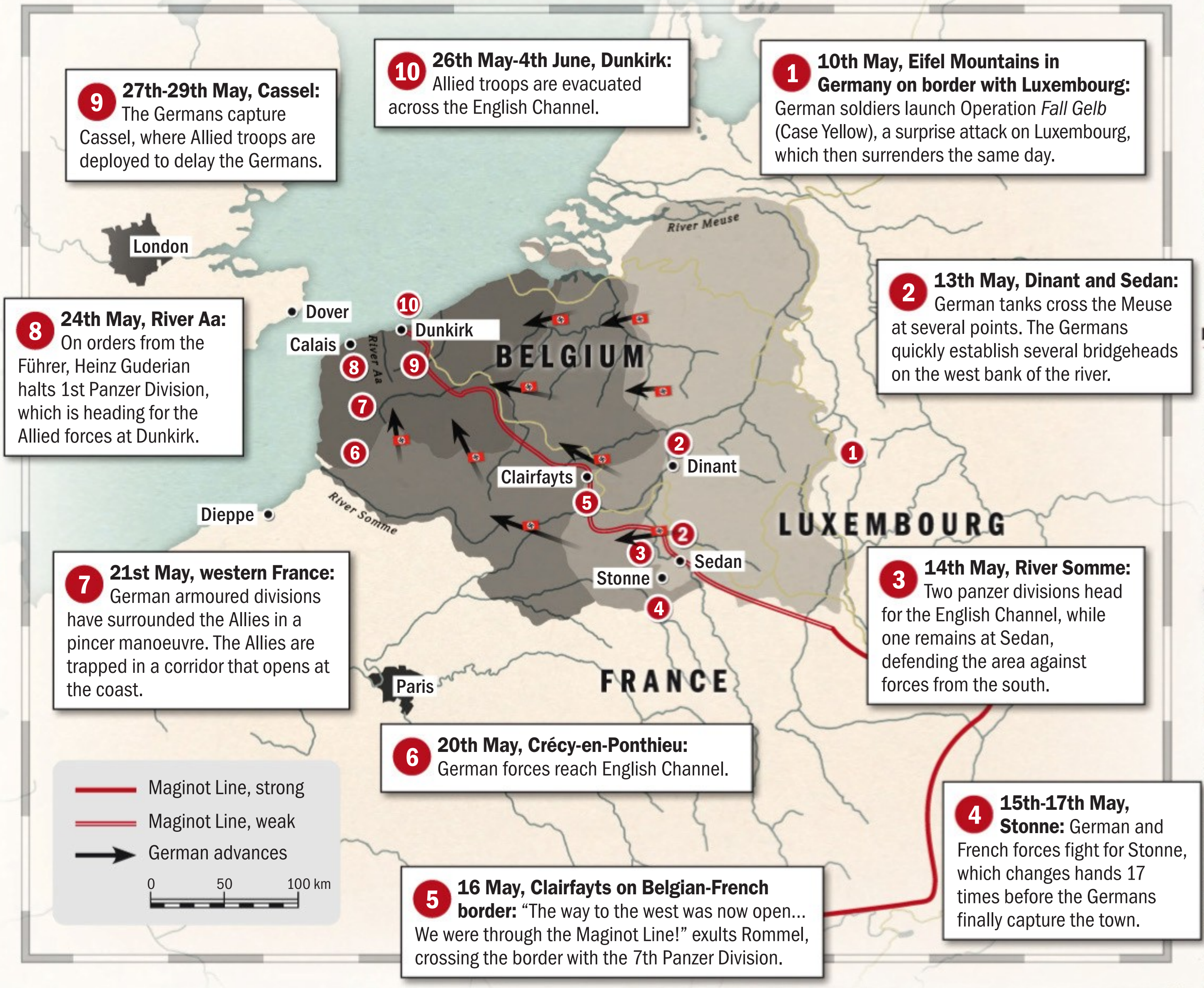
Dunkirk
Paris
FRANCE

In less than two weeks, the Germans captured the whole of northern France and pushed the defensive forces towards the coast. A month later, France surrendered to Nazi Germany. One of the reasons the invasion went so well was that the Germans bypassed the mighty defences on the Franco-German border – the Maginot Line. Instead, the Germans advanced through the Benelux countries, crossing the French border in places where the Maginot Line was weaker.

With enormous air support, up to 1,000 tanks dashed at top speed towards the English Channel after the breakthrough, surrounding as many as 500,000 soldiers from the British Expeditionary Force and the Belgian and French armies in a huge pincer manoeuvre.

Allied forces were close to collapse when the Germans halted the advance, giving the British time to organise a rescue mission from Dunkirk on the Channel. As a result, the Royal Navy managed to evacuate over 300,000 troops to England before the trap was sprung. France was then left in the hands of the Germans, who now had a tight grip on Europe and could prepare for a final showdown with the British.

Over 300,000 troops *were shipped to safety from Dunkirk by the Allies.*



1 **10th May, Eifel Mountains in Germany on border with Luxembourg:** German soldiers launch Operation *Fall Gelb* (Case Yellow), a surprise attack on Luxembourg, which then surrenders the same day.

2 **13th May, Dinant and Sedan:** German tanks cross the Meuse at several points. The Germans quickly establish several bridgeheads on the west bank of the river.

3 **14th May, River Somme:** Two panzer divisions head for the English Channel, while one remains at Sedan, defending the area against forces from the south.

4 **15th-17th May, Stonne:** German and French forces fight for Stonne, which changes hands 17 times before the Germans finally capture the town.

5 **16 May, Clairfayts on Belgian-French border:** "The way to the west was now open... We were through the Maginot Line!" exults Rommel, crossing the border with the 7th Panzer Division.

6 **20th May, Crécy-en-Ponthieu:** German forces reach English Channel.

7 **21st May, western France:** German armoured divisions have surrounded the Allies in a pincer manoeuvre. The Allies are trapped in a corridor that opens at the coast.

8 **24th May, River Aa:** On orders from the Führer, Heinz Guderian halts 1st Panzer Division, which is heading for the Allied forces at Dunkirk.

9 **27th-29th May, Cassel:** The Germans capture Cassel, where Allied troops are deployed to delay the Germans.

10 **26th May-4th June, Dunkirk:** Allied troops are evacuated across the English Channel.

unable to believe they had come so far. Just a week and a half earlier, the Germans had launched their blitzkrieg from the border, and now the men were at the finish line. The panzer divisions had advanced more than 320 kilometres, and on that day alone the battalion had covered almost 100 kilometres. Village after village and town after town had waved a white flag before the Germans advanced in tanks and raised the swastika on the town's highest flagpole as a signal to the Luftwaffe.

That Monday, Guderian's 1st Panzer Division had planned an offensive against the town of Amiens on the River Somme, but there was no fighting involved in the attack because the Germans encountered a half-empty town and no resistance. After a few hours, the swastika was flying at the top of a pole in front of the town's post office.

MEANWHILE

NORWAY:
Evacuation of Allied troops in the country begins.

MEXICO:
Leon Trotsky, the Soviet revolutionary and Stalin's opponent, survives a failed assassination attempt.

SWEDEN:
The Swedish Home Guard is established.

"We had the feeling such as a fine racehorse may have, of having been held back by its rider, coldly and deliberately, then getting its head free to reach out into a swinging gallop and speed to the finishing-post as winner," noted a German soldier.

On 20th May, US war correspondent William Shirer, who was stationed in France and had managed to follow the Germans' advance, watched in awe and tapped away at his typewriter for the readers at home:

"It is a gigantic, impersonal war machine, run as coolly and efficiently, say, as our automobile industry in Detroit ... thousands of motorised vehicles thundering by on the dusty roads, officers and men alike remain cool and business-like. Absolutely no excitement, no tension. An officer directing artillery fire stops for half an hour to explain to you what he is up to."

Shirer also described the Germans' efficient supply system, which, like an assembly line, brought food, fuel and ammunition from the border to the front line, while prisoners of war marched in columns in the opposite direction. By the time the Germans reached the sea, the panzer divisions had surrounded up to 500,000 British, French and Belgian troops in a pocket stretching along the coast from the Dutch border in the north to the River Somme in the south. And as the Germans tightened their grip on the pincer over the following days, the Allies panicked and planned a huge evacuation of troops from the French coastal town of Dunkirk on the Belgian border across the English Channel. The evacuation mission was code-named Operation Dynamo.

Soldiers had a rest

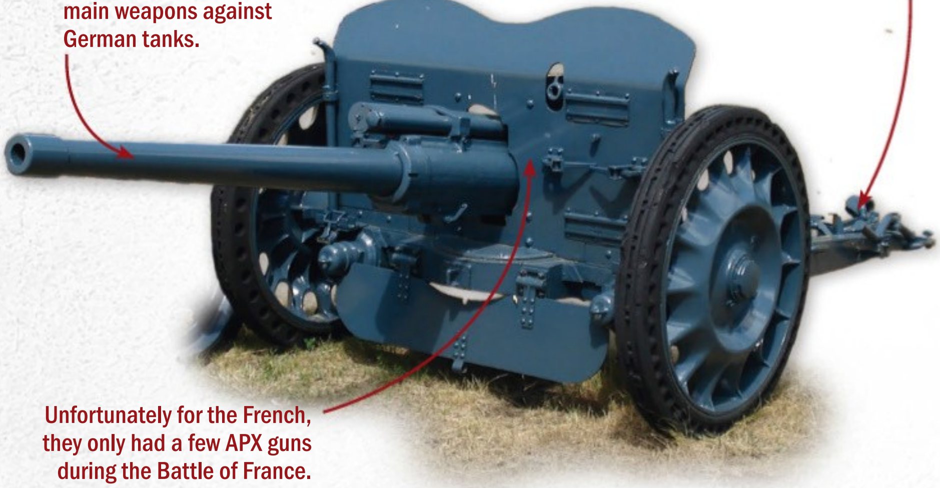
Operation Dynamo was launched when British intelligence intercepted a secret message from German General von Rundstedt on 24th May. Contrary to expectations, von Rundstedt, on behalf of the Führer, ordered the blitzkrieg put on temporary hold. Guderian had just crossed the River Aa and was heading straight for Dunkirk with his panzer division when he received the message that no troops were allowed to proceed. Guderian therefore reluctantly withdrew his troops from the bridgehead he had established on the opposite bank of the river.

The order to slow down the advancing war machine was issued due to several factors. Firstly, the pincer manoeuvre had dispersed the German troops and one of the armoured divisions needed reinforcements to repel a counter-attack near the town of Arras. Secondly, the tanks were not built to fight in the marshland south of Dunkirk. And thirdly, the soldiers needed a rest after two weeks of continuous fighting with no time for sleep. The men were completely exhausted.

Another possible explanation was that Hermann Göring, commander of the Luftwaffe, had phoned Hitler the day before and convinced him that his planes – not the armoured divisions – should take the credit for defeating the last pocket around Dunkirk. Historians have since judged that Hitler's order to pause the blitzkrieg was decisive in Germany's failure to win the Battle of Britain. Had the panzer divisions continued towards the coast, the Germans would probably have been able to defeat the Allied soldiers and continue the war across the Channel.

The order gave the Allies time to concentrate troops near Dunkirk and establish a defensive ring around the town, placing soldiers in the upland corridor through which the troops were to be evacuated.

Some 40,000 men were designated as a sort of rearguard, to defend the ring to the last man and delay the Germans as much as possible while the British shuttled soldiers across the English Channel. Leading the evacuation was the British Lord Gort. He ordered the rearguard to barricade themselves in everything from barns to foxholes in towns such as



The APX anti-tank gun was one of France's main weapons against German tanks.

The gun could shoot through armour up to 60 millimetres thick.

Unfortunately for the French, they only had a few APX guns during the Battle of France.

I shall never forget the rasping noise of his breathing. It took about two minutes before he drowned in his own blood. ■ **Julian Fane, British Second Lieutenant.**

Dunkirk was defended in part *by British planes, which had to fly over the English Channel to provide air support for troops on the ground.*

Cassel and Le Paradis, knowing he was sacrificing these men to save others. In Cassel, which was situated on a ridge, the British rearguard faced a scene of horror as they moved into position. Luftwaffe Stukas had been at work, and in the streets, dead horses lay side by side with charred human bodies.

"I can still see a black pony in agony and terror with full shining teeth, and jaws apart," noted one British soldier in his diary.

Another British soldier described Cassel as the last place on Earth he wanted to be:

"Cassel was mainly in ruins from air bombing. Lorries destroyed by fire, together with the debris from the houses, and telephone wires blocked the streets. Smoke here and there marked the dying embers of burnt buildings."

There in the ruins, the British prepared their defensive positions and settled down to await the inevitable German attack. Sure enough, on 27th May – after a three-day pause – von Rundstedt, acting on orders from Hitler, declared that the stand-off had lasted long enough. The lightning war could continue. Two days later, German shells rained down once more on the now fortified town, and Lieutenant Tom Carmichael, in a cellar of one of the houses, had to throw himself and his comrades to the ground to protect themselves from shrapnel. He lay sprawled on the floor, his helmet over his face.

"A major came into the cellar for shelter and was standing at my feet. In spite of the racket and the banging, I was almost asleep, when we were electrified by a terrific explosion. [There was] an acrid smell, and a shower of masonry [fell] on my head. I had almost freed myself when another great weight from above pinned me down again. I scrambled free and began looking round. The floor above my head had been blown away completely, and the chest of drawers which had contained last night's dinner service [in] the room above, was the second weight that descended upon me. As the dust cleared, I found the remains of another less fortunate than us. It was the major who had taken shelter in our cellar. He was in two halves."

British sneaked out of Cassel

The German attack on Cassel was so intense that early on the morning of 30th May, the Allied ▸

soldiers tried to sneak out of the town, heading for Dunkirk, from where their comrades had been sailing to safety in England for the past few days. They had accomplished the task of delaying the German advance for a while but now it was time to leave. Escaping, however, was not straightforward. Nineteen-year-old Second Lieutenant Julian Fane was one of the soldiers who tried to escape through some nearby woods but was spotted by the Germans.

"We had not been there long, before the whole area around the wood resounded with the cries of 'Kamerad! Kamerad!' *There were quite a lot of troops shouting this treacherous word at the top of their voices. Then they all stopped, and a voice started speaking in clear tones in very good English. The words the man spoke were 'Come out! Come out! Hitler is winning the war. You are beaten. Come out, or we shall shell you out. Lay down your arms and come out running.' It was a nasty moment for we all realised the hopeless position we were in. One false move and we would all be shelled to hell."*

Many of Julian Fane's comrades were captured or killed but the 19-year-old was one of the few to escape the woods, with German troops hot on his heels.

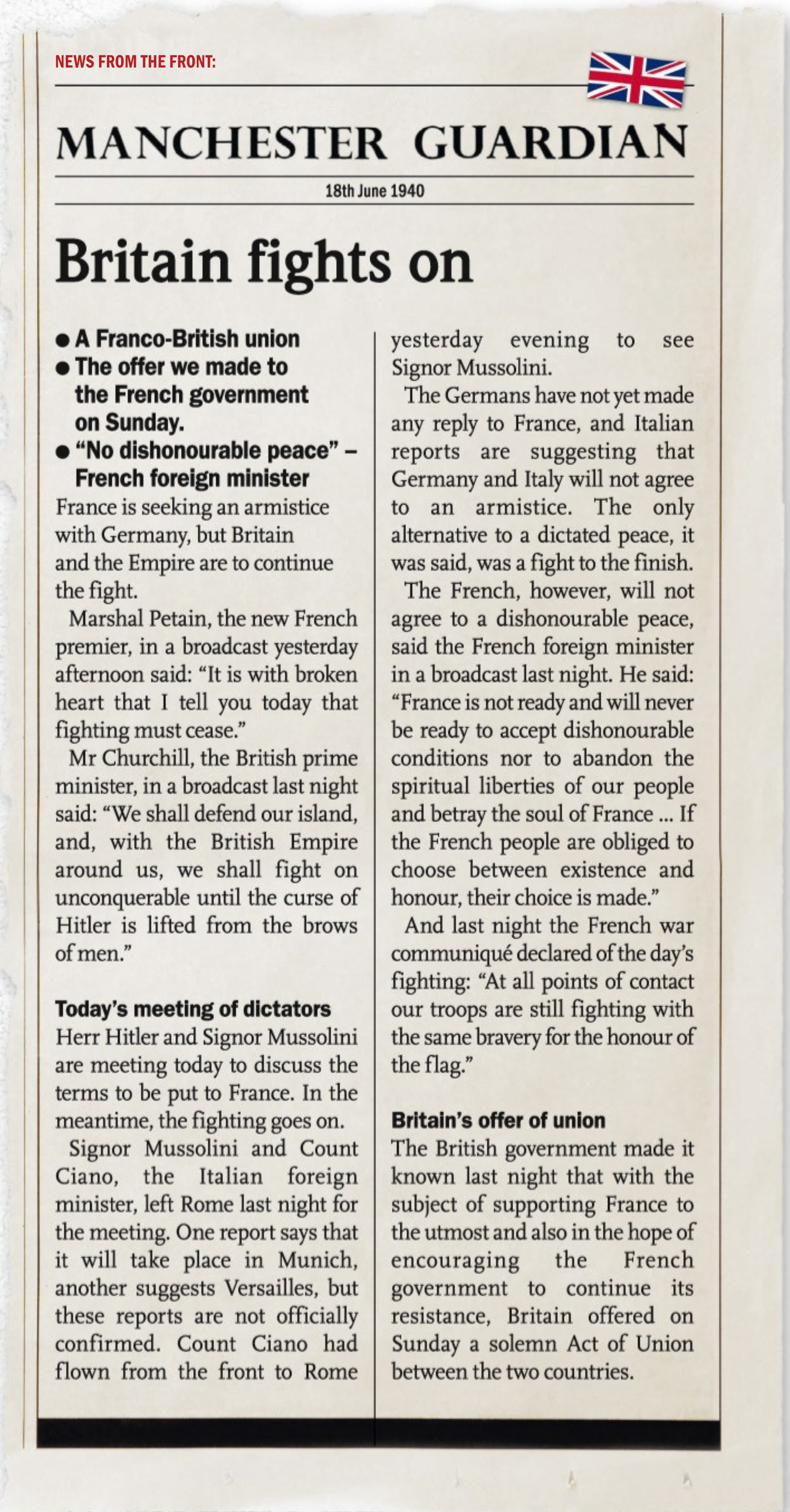
"Lieutenant Dick Olive, who was in front of me, caught a blast of machine-gun fire in the chest. His lungs began to fill, and I shall never forget the rasping noise of his breathing. It took about two minutes before he drowned in his own blood."

Julian Fane escaped with a wounded arm, and together with 11 other men, he shook off the pursuers and found a hiding place in a ditch. The young officer convinced the group that they could only escape under cover of darkness, while they had to hide during the day. After three nights of fleeing through marshes on meagre rations of biscuits and tinned food, Fane and his comrades reached the beach at Dunkirk.

Since 26th May, everything from warships to fishing boats had been ferrying troops across the Channel, while the RAF held the Germans at bay from the skies above the evacuation beaches, and by the time the last vessel left the beach at Dunkirk on 4th June, Operation Dynamo had succeeded against all odds in transporting as many as 338,000 troops – 110,000 of them French – across the Channel.

The evacuation had focused on getting men across the sea, and the British in return had to leave masses of supplies behind. Abandoned in France were 2,472 British guns, 445 tanks, nearly 64,000 vehicles, 20,548 motorcycles and 68,000 tonnes of ammunition. Shortly afterwards, when Churchill gave a speech to parliament assuring his audience that Britain would continue to fight by sea, land and air, he muttered to a colleague that the British now had to fight with broken beer bottles because they had nothing else left.

The Germans continued unhindered through France, and on 25th June the country finally surrendered to the Nazis. Britain was now the only country in Europe still holding out against Nazi Germany. The Battle of Britain was about to begin. ■



NEWS FROM THE FRONT:

MANCHESTER GUARDIAN

18th June 1940

Britain fights on

- **A Franco-British union**
- **The offer we made to the French government on Sunday.**
- **"No dishonourable peace" – French foreign minister**

France is seeking an armistice with Germany, but Britain and the Empire are to continue the fight.

Marshal Petain, the new French premier, in a broadcast yesterday afternoon said: "It is with broken heart that I tell you today that fighting must cease."

Mr Churchill, the British prime minister, in a broadcast last night said: "We shall defend our island, and, with the British Empire around us, we shall fight on unconquerable until the curse of Hitler is lifted from the brows of men."

Today's meeting of dictators

Herr Hitler and Signor Mussolini are meeting today to discuss the terms to be put to France. In the meantime, the fighting goes on.

Signor Mussolini and Count Ciano, the Italian foreign minister, left Rome last night for the meeting. One report says that it will take place in Munich, another suggests Versailles, but these reports are not officially confirmed. Count Ciano had flown from the front to Rome yesterday evening to see Signor Mussolini.

The Germans have not yet made any reply to France, and Italian reports are suggesting that Germany and Italy will not agree to an armistice. The only alternative to a dictated peace, it was said, was a fight to the finish.

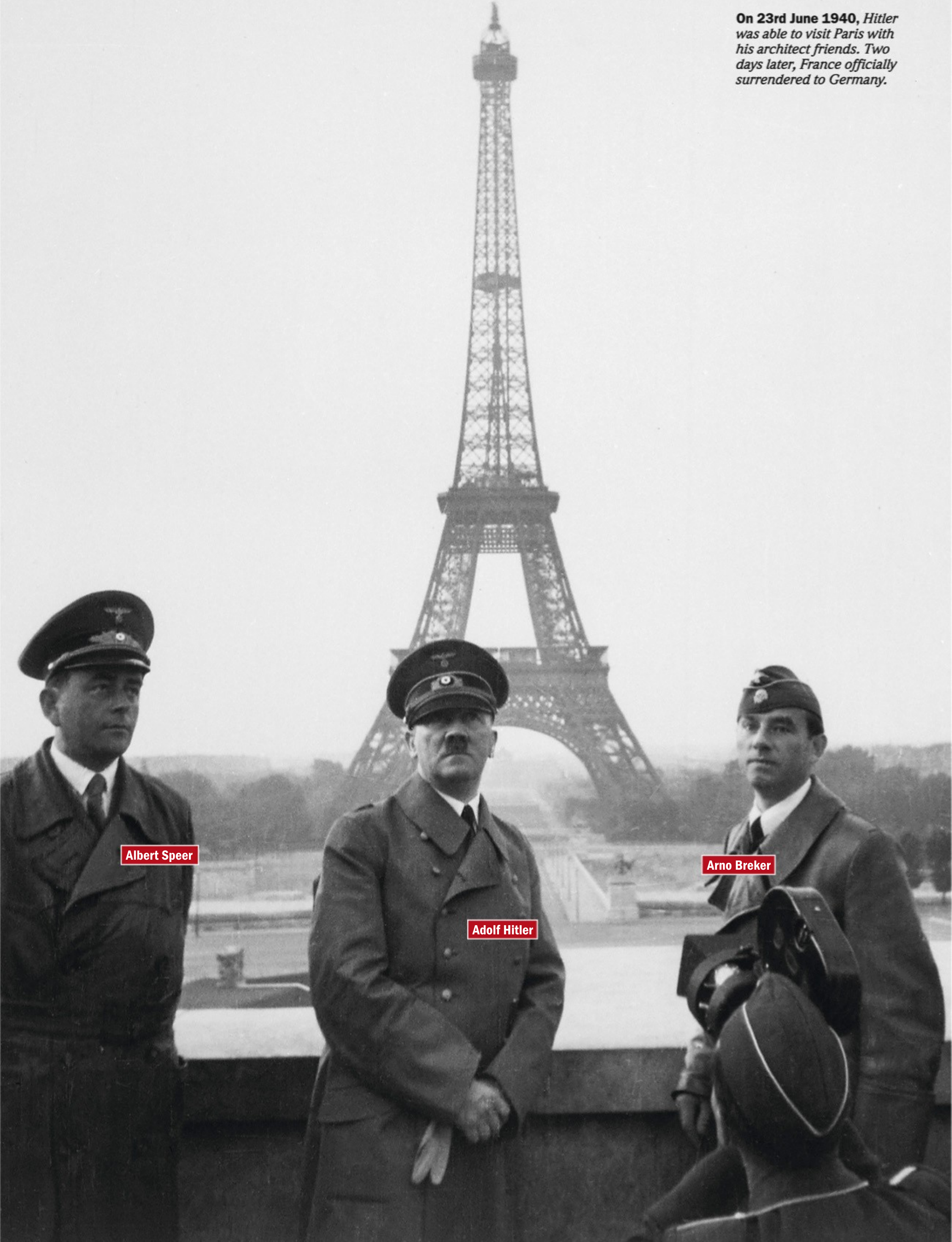
The French, however, will not agree to a dishonourable peace, said the French foreign minister in a broadcast last night. He said: "France is not ready and will never be ready to accept dishonourable conditions nor to abandon the spiritual liberties of our people and betray the soul of France ... If the French people are obliged to choose between existence and honour, their choice is made."

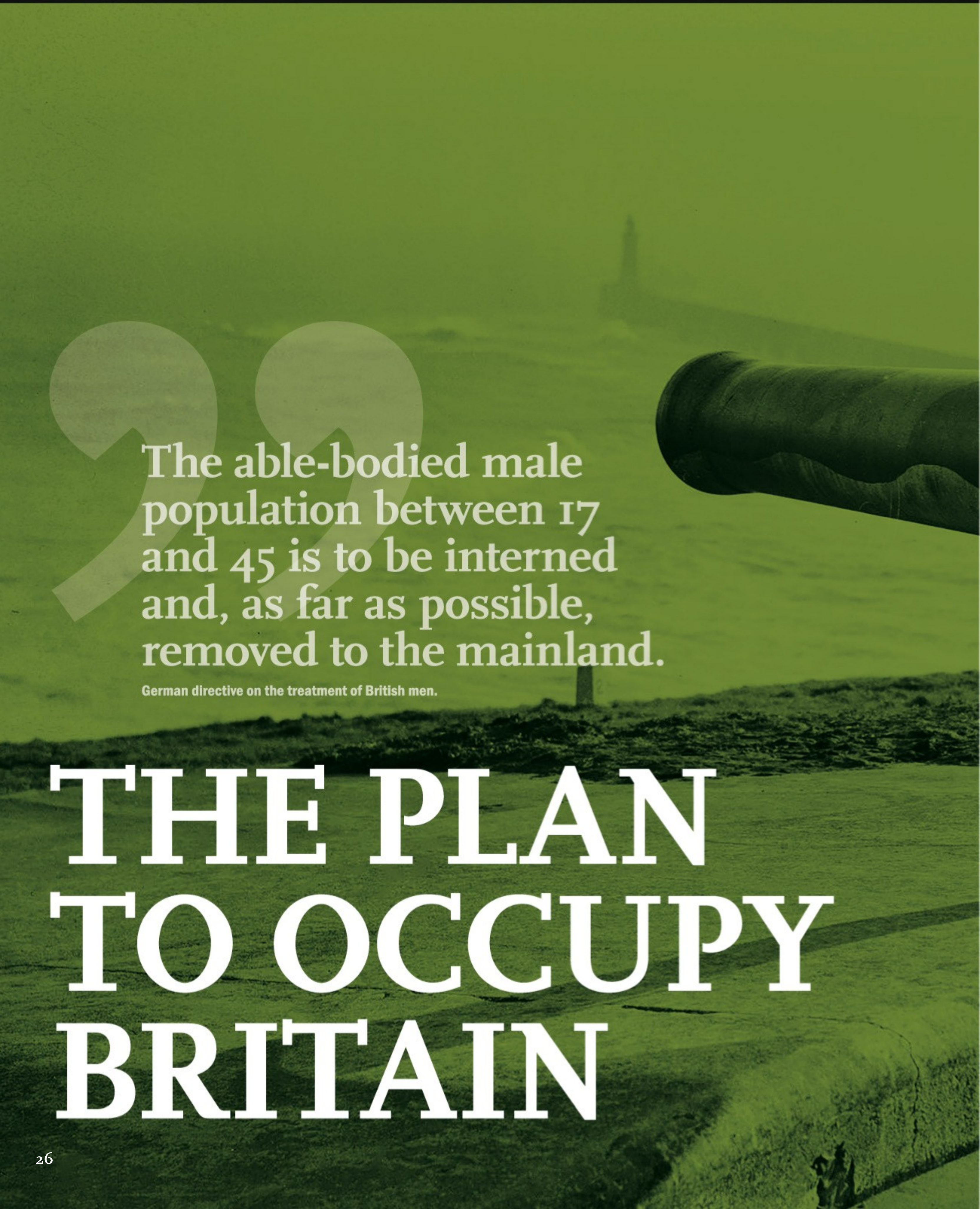
And last night the French war communiqué declared of the day's fighting: "At all points of contact our troops are still fighting with the same bravery for the honour of the flag."

Britain's offer of union

The British government made it known last night that with the subject of supporting France to the utmost and also in the hope of encouraging the French government to continue its resistance, Britain offered on Sunday a solemn Act of Union between the two countries.

On 23rd June 1940, *Hitler was able to visit Paris with his architect friends. Two days later, France officially surrendered to Germany.*


Albert Speer
Adolf Hitler
Arno Breker



> The able-bodied male population between 17 and 45 is to be interned and, as far as possible, removed to the mainland.

German directive on the treatment of British men.

THE PLAN TO OCCUPY BRITAIN

The British feared a German invasion, *so army command ordered the coastline to be defended with guns and new fortifications.*

The plan to occupy Britain

After the Nazis' victorious blitzkrieg against France, Hitler ordered his navy and army to prepare for an amphibious assault on the British Isles. Under Operation Sealion, 260,000 German troops were to storm the country from the south, seize power within a month and impose a brutal military dictatorship.

By Mette Iversen

Propaganda Minister Joseph Goebbels had made sure that the whole world could listen in over the radio when Hitler took to the podium at the Kroll Opera House in Berlin on 19th July 1940. In front of the Führer in the concert hall's seats, his party colleagues pricked up their ears as the Nazi leader, with his usual dramatic tone and gestures, began by praising the German people for their efforts in the recent victory over France. To the audience – both in the hall and at home in their living rooms – it became clear that the Führer was now appealing to Britain's "reason" and willingness to negotiate peace.

Although German armoured divisions had chased British troops out of northern France from Dunkirk less than two months previously, Hitler's speech stressed that his National Socialist regime had important foreign policy objectives that he would now pursue in order to achieve "true understanding and friendship" with Italy and Britain.

"I immediately undertook, as soon as the German people entrusted me with their leadership, to realise these oldest goals of National Socialist foreign policy in practical terms. It still saddens me today that, in spite of all my endeavours, I have not succeeded in obtaining this friendship with England which, I believe, should have been a blessing for both peoples."

Alongside Hitler's plea for friendship, however, he made no attempt to hide the threat that if Churchill refused Nazi Germany's proposal, the British prime minister could count on the continuation of war and more dead soldiers than the 70,000 men Britain had already lost in Germany's blitzkrieg in France.

"And Mr Churchill should make an exception and place trust in me when as a prophet I now proclaim: a great world empire will be destroyed. A world empire which I never had the ambition to destroy or as much as harm. Alas, I am fully aware that the continuation of this war will end only in the complete shattering of one of the two warring parties. Mr Churchill may believe this to be Germany. I know it to be England. In this hour I feel compelled, standing before my conscience, to direct yet another appeal to reason in England. I believe I can do this as I am not asking for something as the vanquished, but rather, as the victor, I am speaking in the name of reason. I see no compelling reason which could force the continuation of this war."

If Churchill listened to Hitler's two-hour, seven-minute speech that summer evening, he would have been left in no doubt. Either he would make peace with Hitler, or Germany would take Britain, just as it had taken Denmark, Norway, Luxembourg, Holland, Belgium and, most recently, France in the spring.

Church bells hailed troops

The idea of invading Britain had arisen as early as autumn 1939, when Hitler ordered the head of the Kriegsmarine, Grand Admiral Erich Raeder, to explore the possibility of an amphibious operation, landing troops on the British coast. At a conference in January 1940, Nazi generals determined that an invasion was only possible if Germany was successful on the Western Front, but nevertheless recommended that engineers be immediately set to work developing landing craft and that the army create an amphibious brigade of engineer troops. Despite the preparations, when Hitler's troops reached the English Channel on 20th May, the invasion of Britain was still merely a suggestion hinted at in secret reports.

The invasion plan was given a new lease of life amid the euphoria that prevailed after Germany's successful blitzkrieg in France. On 21st June 1940, the Führer ordered the retrieval from a museum of

STRENGTH RATIO

The Germans planned to put **around**

260,000

soldiers ashore in Britain. They were to be transported across the English Channel by, among other things,

2,000

barges and 168 transport ships.

the train carriage in which Germany's leadership had acknowledged the Reich's stinging World War I defeat by signing an armistice. He wanted to make up for the humiliation of 1918 by forcing France's General Huntziger and his delegation to sign this new armistice with Germany in the same carriage.

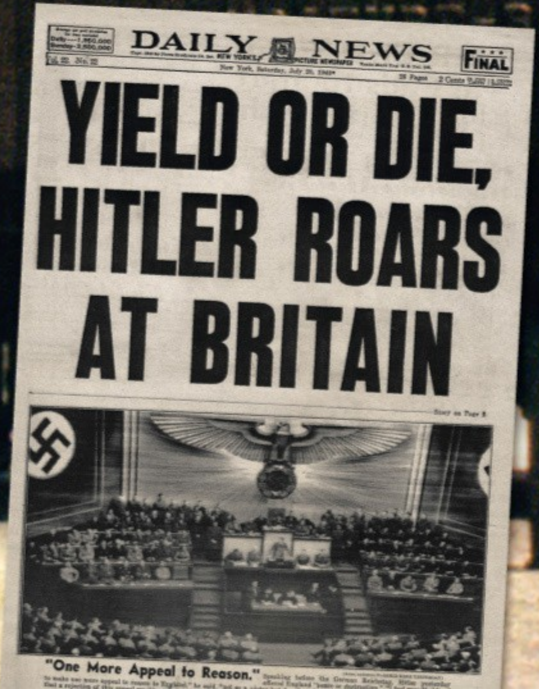
"The disgrace is now extinguished. It's a feeling of being born again," noted Propaganda Minister Joseph Goebbels that evening as he hung up the phone after conversing with Hitler.

When Hitler returned from France to Berlin on 6th July, flags and church bells had been marking the victory for over a week. Young girls in Bund Deutscher Mädel uniforms – the female version of the Hitler Youth – strewed flowers on the streets in front of the Anhalter station, where the Führer's train pulled in, and scattered blooms all the way to the Reich Chancellery. The sun was shining on Berlin, and confidence surged through every Nazi's veins.

Hitler informed his generals that the invasion of Britain would take place when the ground was prepared. However, it was still just plan B, to be implemented only if Churchill refused to make peace. And in Hitler's skewed view, that was unthinkable.

Shortly after, Grand Admiral Raeder visited Hitler at his Berghof residence and went through the risks and difficulties that a landing would entail. The Grand Admiral stressed that he would not ▸

To humiliate the French, *the armistice was signed in the same train carriage where the Germans had signed the 1918 armistice after World War I.*



DAILY NEWS

NEW YORK'S PICTURE NEWSPAPER

FINAL

YIELD OR DIE, HITLER ROARS AT BRITAIN

"One More Appeal to Reason."

Soldiers would be landed from Brighton to Dover

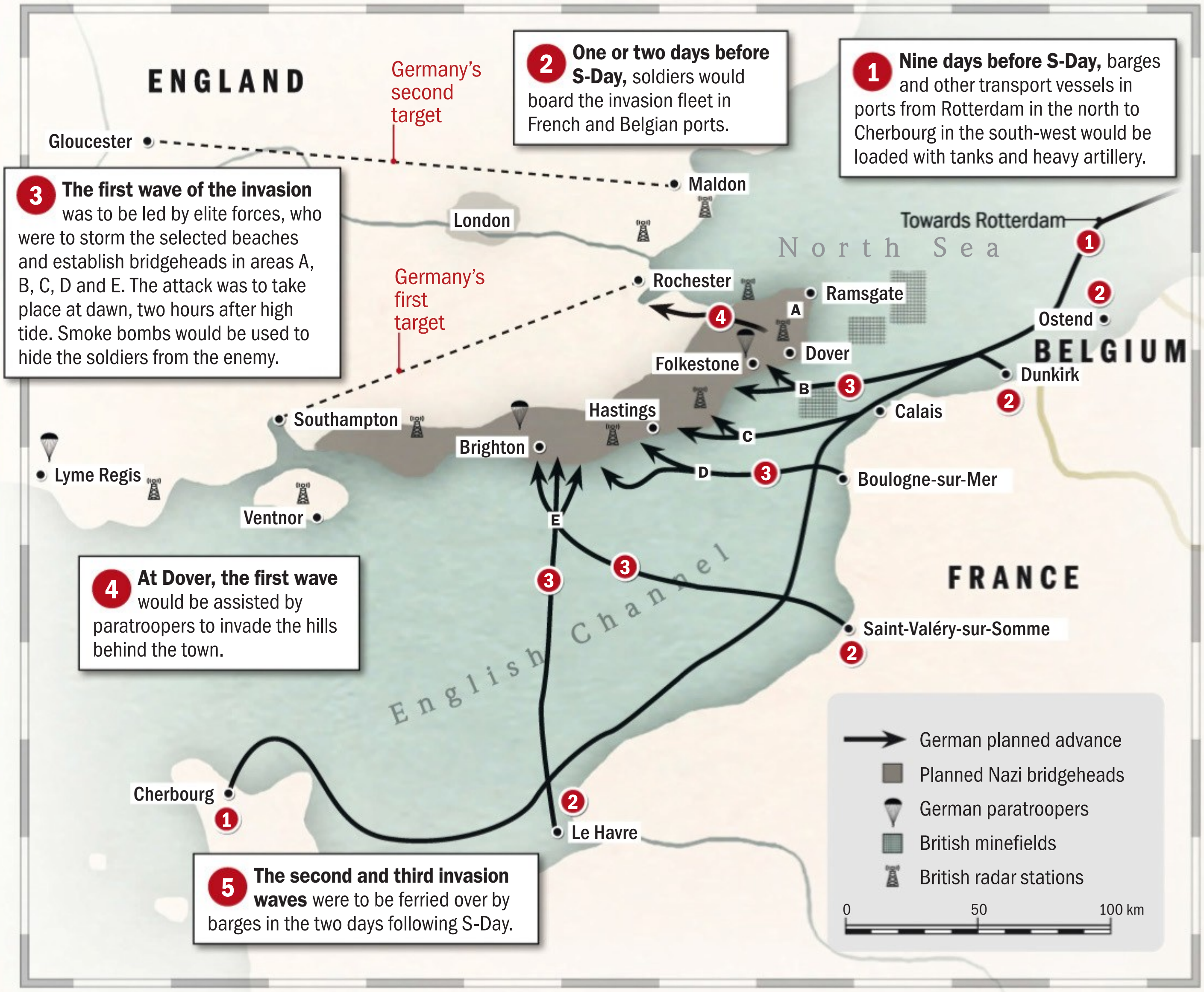
BRITAIN
English Channel
FRANCE

With Operation Sealion, the Germans planned to land 260,000 troops, plus tanks and artillery, on the south coast of England. During the preparations, however, the generals encountered the same problems the Allies would face when the US and Britain planned D-Day later in the war, which took place in northern France in June 1944.

Like the Allies, the Germans had to take account of the tides, and the army and navy were deeply divided over whether it was wisest to attack the English coastline across a narrow or a broad front. According to an Army High Command document of 30th August, troops were to be landed in five different zones, called A, B, C, D and E, on a stretch from Brighton in the west to Dover in the east.

Because of the limited number of landing craft available, the invasion on S-Day had to be carried out in waves, the first of which was to storm the coast and secure bridgeheads. Which groups would attack where and when was changed several times. The Germans expected to gain control of the coast in about ten days and that Britain would surrender within a month of S-Day.

Paratroopers *would follow quickly on the heels of the first wave of the invasion.*


ENGLAND
Germany's second target
Gloucester
Maldon
London
North Sea
Towards Rotterdam
Germany's first target
Rochester
Ramsgate
A
Dover
Ostend
BELGIUM
Folkestone
B
Dunkirk
Calais
Southampton
Hastings
C
Brighton
D
Boulogne-sur-Mer
Lyme Regis
Ventnor
E
FRANCE
English Channel
Saint-Valéry-sur-Somme
Cherbourg
Le Havre
1
2
3
4
German planned advance
Planned Nazi bridgeheads
German paratroopers
British minefields
British radar stations
0
50
100 km

① **Nine days before S-Day,** barges and other transport vessels in ports from Rotterdam in the north to Cherbourg in the south-west would be loaded with tanks and heavy artillery.

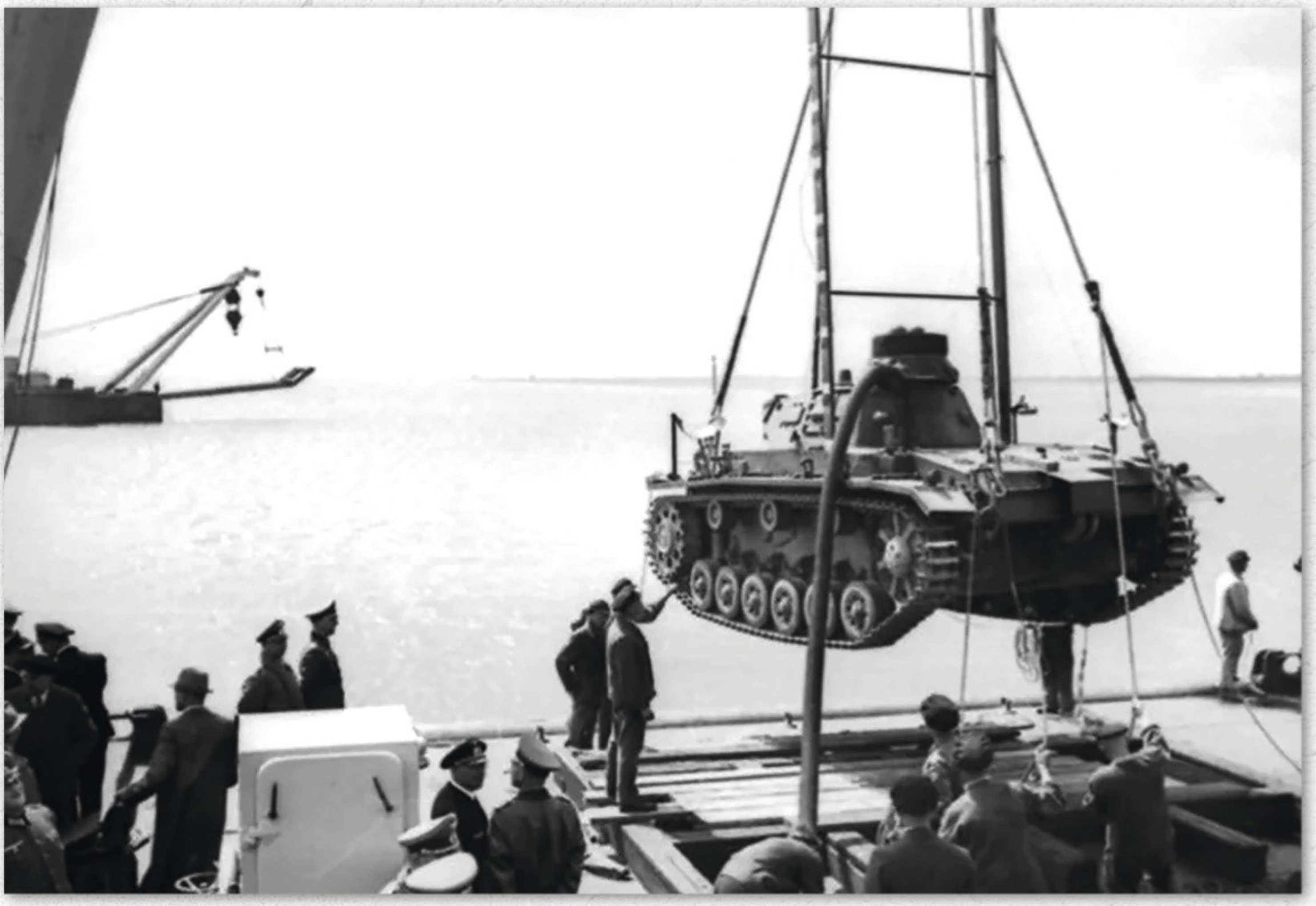
② **One or two days before S-Day,** soldiers would board the invasion fleet in French and Belgian ports.

③ **The first wave of the invasion** was to be led by elite forces, who were to storm the selected beaches and establish bridgeheads in areas A, B, C, D and E. The attack was to take place at dawn, two hours after high tide. Smoke bombs would be used to hide the soldiers from the enemy.

④ **At Dover, the first wave** would be assisted by paratroopers to invade the hills behind the town.

⑤ **The second and third invasion waves** were to be ferried over by barges in the two days following S-Day.

I might just as well put the troops that have landed through the meat grinder straight away. ■ **General Franz Halder on the German invasion plans.**



The Tauchpanzer III *was waterproof and could be submerged for up to 20 minutes while driving on the seabed to the invasion beach.*

recommend an invasion across the English Channel, but believed that the British could be defeated through a combination of air strikes and submarine attacks against the Atlantic supply line. The Führer also expressed doubts about a possible invasion and stressed that the attack should be a last resort. But contrary to his expectations, there were still no appeasing signs of a ceasefire from across the Channel, and on 16th July, Hitler signed Directive 16, ordering preparations for an invasion, code-named Operation Sealion.

"Since England, in spite of her hopeless military situation, shows no signs of being ready to come to an understanding, I have decided to prepare a landing operation against England and, if necessary, to carry it out. The aim of this operation will be to eliminate the English homeland as a base for the prosecution of the war against Germany and, if necessary, to occupy it completely," Hitler threatened in the decree, which also listed four preconditions that had be met before the invasion could happen.

First, the Royal Air Force had to be eliminated via attacks on airbases, so the RAF no longer posed a threat to the invasion force. Second, the English Channel had to be cleared of mines, while the Strait of Dover, across which a significant part of the invasion force was to be ferried, had to be blocked with German mines at each end to provide safe passage. Third, the coast was to be protected by German artillery. And fourth, the Royal Navy's focus had to be diverted to the Mediterranean and North Sea. Three days after signing Directive 16, Hitler broadcast his threat to invade Britain to the world by radio from the Kroll Opera House.

Troops to advance on London

Operation Sealion was to land 260,000 troops on the south coast of England, between Brighton and Dover. Prior to this, the Luftwaffe had the task of clearing the way for ground troops by destroying the RAF. Landing craft were to ferry German infantry and artillery, as well as tanks, across the Channel, where they would occupy the coastal areas, then advance north towards London.

Hitler expected Britain to surrender within a month, then he would rule the country with an iron fist. A directive made it clear that *"the able-bodied* ▸

> **It is a matter of a couple of weeks, you know, until we finish off the RAF. In a fortnight the British won't have any more planes.** ■ **German pilot.**

male population between 17 and 45 is to be interned and, as far as possible, removed to the mainland". In other words, the Nazis intended to move 11 million male Britons across the Channel to labour camps in mainland Europe to toil for the Third Reich. SS officer Franz Six was appointed the future head of the Nazi police corps in Britain and tasked with rooting out all anti-Nazi elements. Representatives of the media, political movements and opposition organisations were to be interrogated and interned. To prepare the British for the new policy, the Germans printed piles of pamphlets to be distributed during the invasion.

"Any ill-considered act, any form of sabotage, any resistance, active or passive, against the German Armed Forces will be met with the sharpest possible reprisals," the text read.

Hitler's ambitious plans were one thing, the practical details of the invasion itself were another. From the outset, the German Army's generals were sceptical and disagreed about how the operation should proceed. Grand Admiral Raeder believed that the Kriegsmarine could not possibly protect all the landing troops and argued that the attack should be confined to the 100-kilometre stretch of coast between Eastbourne and Folkestone.

"In view of the weakness of our naval forces, the enemy's penetration into the area of transports cannot effectively be prevented," Raeder's doubtful statement read.

The German Army commander, Franz Halder, believed that a landing on that particular fortified stretch would be tantamount to certain death:

"I might just as well put the troops that have landed through the meat grinder straight away."

Only the Luftwaffe commander, Hermann Göring, seemed enthusiastic about the operation and, in late July, promised Hitler that he would crush the RAF within four weeks. On 13th August, Hitler finally gave Göring the go-ahead to launch Operation *Adlerangriff* (Eagle Attack), which would wipe out airbases and aircraft in southern England.

"It is a matter of a couple of weeks, you know, until we finish off the RAF. In a fortnight the British won't have any more planes," boasted a Messerschmitt pilot.

But on the very first day, the attacks took a heavy toll on Göring's pilots and aircraft. As many as 47 German planes were shot down before the day was out. The British lost only 13 aircraft.

Exhausted British pilots had to take to the skies up to six times a day to defend RAF hangars and bases from German bombs, but although they hit many of the Luftwaffe's planes, swarms of Nazi aircraft continued to cross the Channel and several British bases exploded in flames under the rain of bombs. Day after day, though, the Luftwaffe still lost more planes and pilots than the RAF.

"We saw one comrade after another disappear from our ranks. There was never a day without another empty chair in the mess," recounted one German pilot.

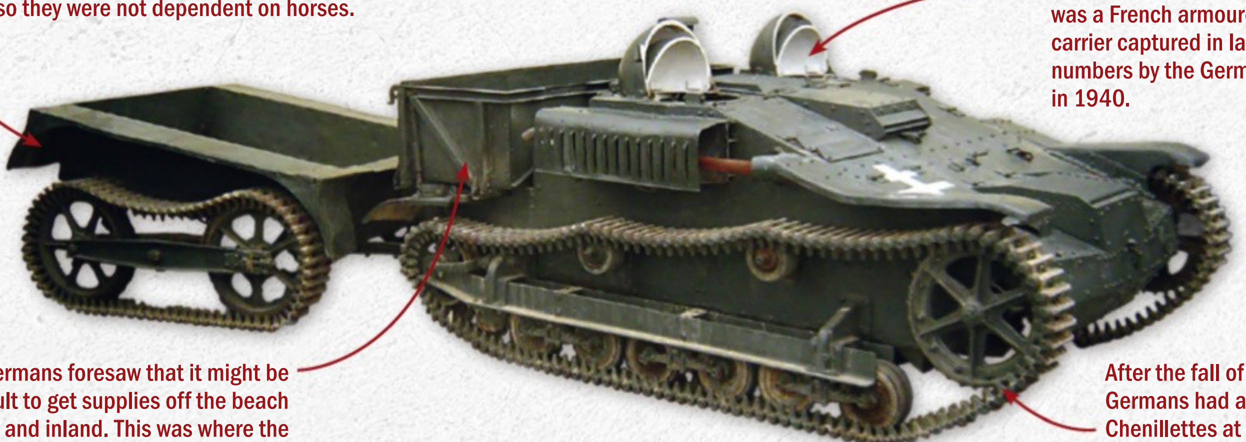
Germans converted barges

When Hitler signed Directive 16 in mid-July, thousands of engineers were already preparing an invasion fleet that could carry hordes of soldiers across the Channel. The plan was for a landing in mid-September, on what was code-named S-Day, but there wasn't enough time to build new boats. The engineers, therefore, had to make do with the vessels already available, so they worked out how barges, which normally transported goods along rivers and canals, could be converted into military vessels.

Several thousand barges were towed to shipyards, where shipbuilders were ready to provide the vessels with a door in the bow and wooden ramps that could roll out so that soldiers and artillery could be landed on the beaches. The sides of the boats were also ▸

FACTS

According to the invasion plans, the Kriegsmarine was to defend the landing areas with just **ten destroyers.** By comparison, in July 1940 the British had **seven battleships, 16 cruisers and 30 destroyers** – with more ships on the way. The reason for the imbalance was that the invasion of Norway had cost half the surface ships in the German fleet.

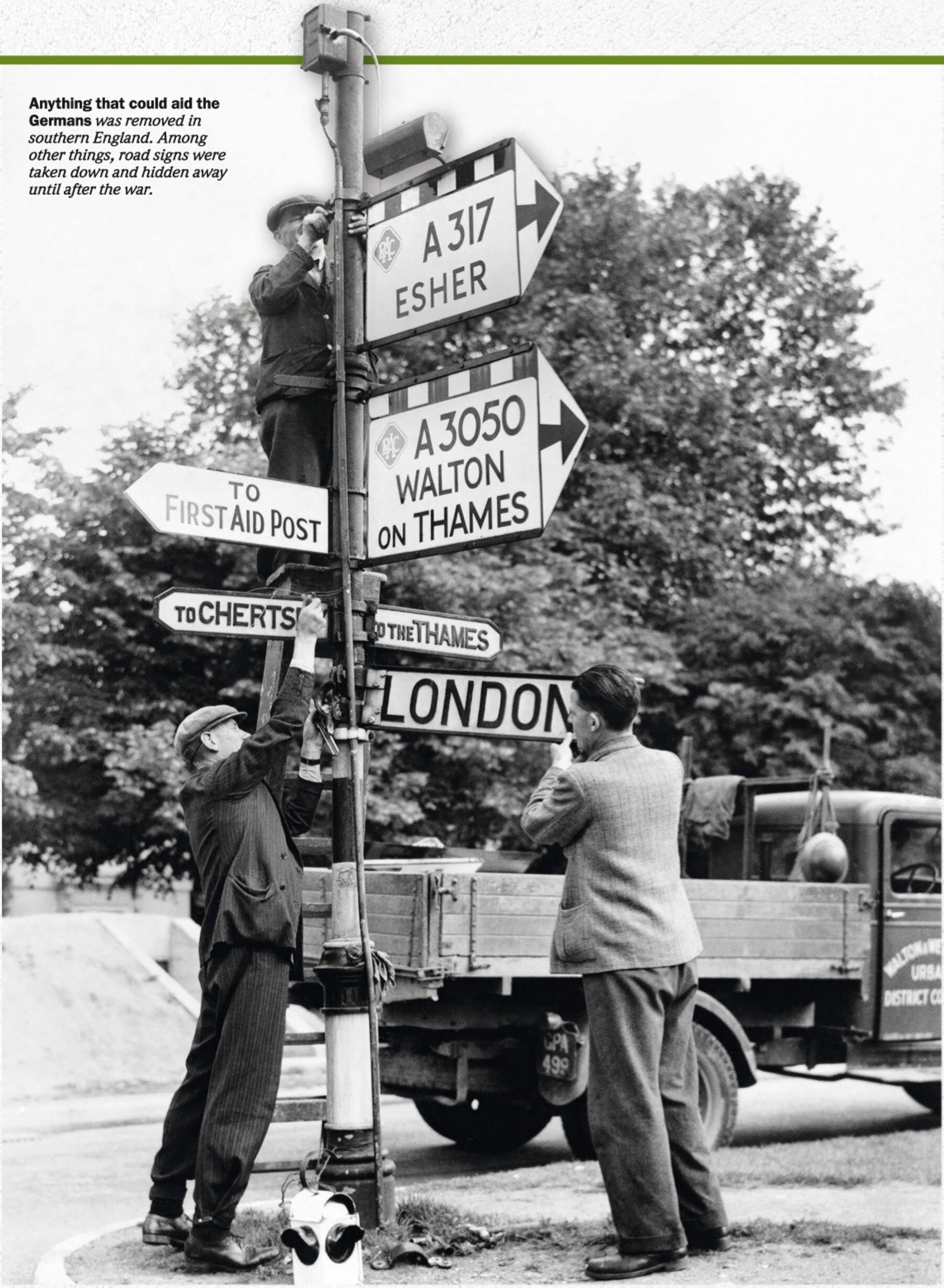


The Chenillette was to follow the first wave of invasion troops, so they were not dependent on horses.

The Renault UE Chenillette was a French armoured carrier captured in large numbers by the Germans in 1940.

The Germans foresaw that it might be difficult to get supplies off the beach and inland. This was where the Chenillette could help.

After the fall of France, the Germans had about 3,000 Chenillettes at their disposal.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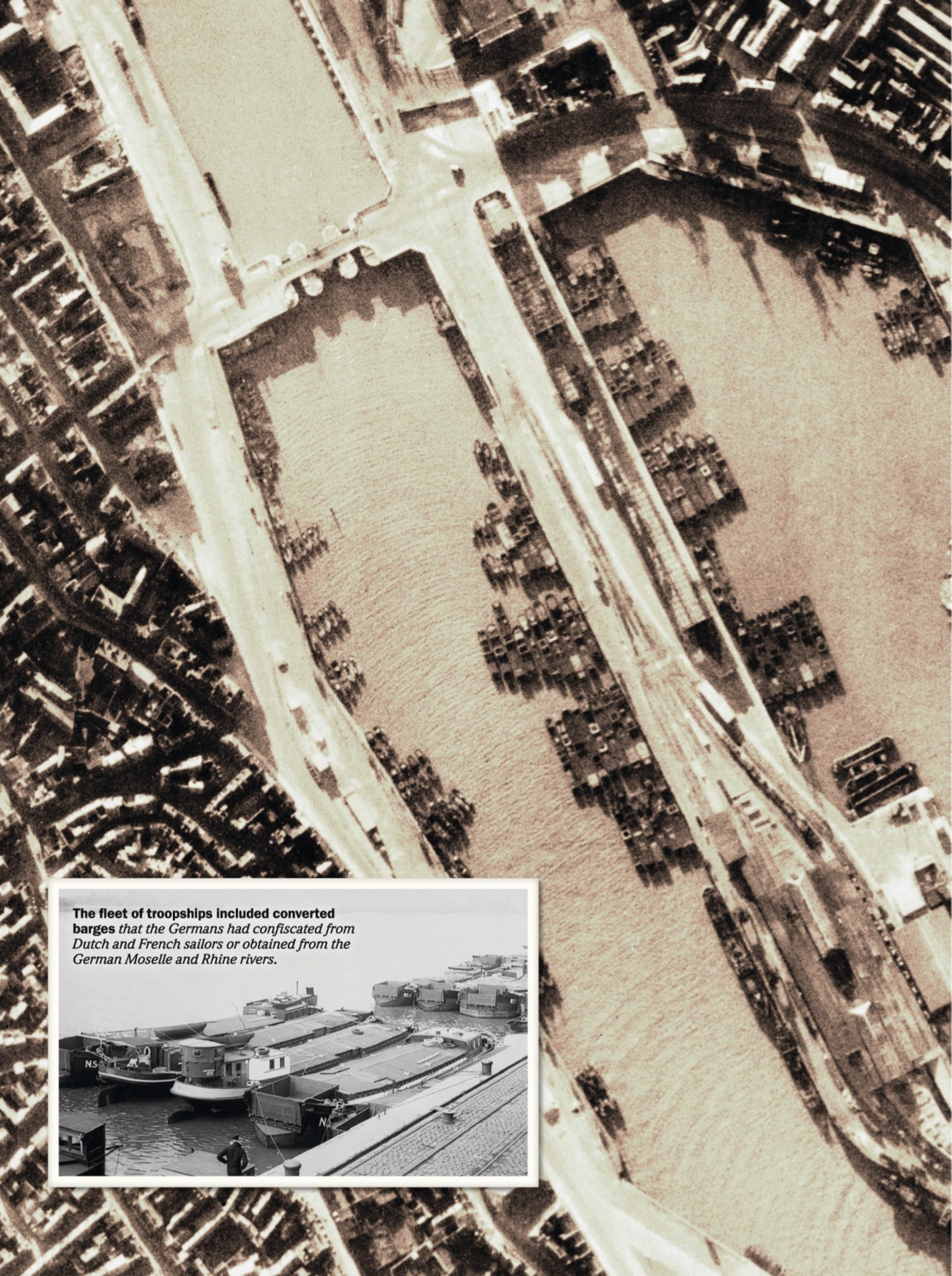
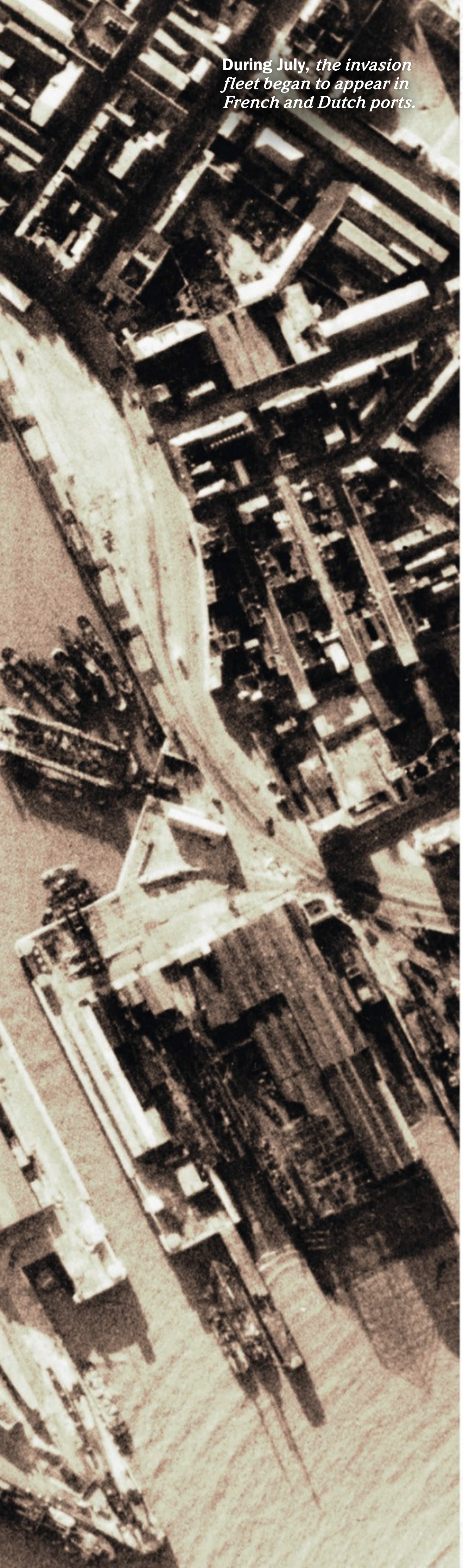
Anything that could aid the Germans *was removed in southern England. Among other things, road signs were taken down and hidden away until after the war.*



The fleet of troopships included converted barges *that the Germans had confiscated from Dutch and French sailors or obtained from the German Moselle and Rhine rivers.*



During July, *the invasion fleet began to appear in French and Dutch ports.*

reinforced with concrete to protect them from enemy fire. The advantage of barges was that their flat-bottomed hulls could sail right up on to the beaches. Their disadvantage was that they might never reach the shore on the other side of the Channel because they weren't built for the open sea. In June, a letter from the merchant shipping association was sent to the German naval high command:

"Rhine vessels are not considered suitable for the transport of troops and equipment due to their lack of seaworthiness and low longitudinal strength."

Wine barrels became rafts

Despite their weaknesses, so many barges filled French ports during summer 1940 that in some places soldiers could walk across them from one quay to the next. Everything from fishing boats to passenger ships was converted for the invasion, and there was no shortage of creativity. Floating bunkers with caterpillar tracks that could sail across the Channel and then crawl ashore, lightning-fast hydrofoils and underwater tanks were all on the drawing board.

While some of the ideas remained in the realms of the imagination, the engineers managed to turn others into reality. For example, they converted the Panzer III into the Tauchpanzer III submersible tank. They fitted rubber sheeting over the turret and gun, so no water could get inside, while an 18-metre-long snorkel provided the crew with fresh oxygen from the surface. The tank could run on the seabed down to a depth of 18 metres and for up to 20 minutes.

The idea was that the tank would be dropped from ships out at sea, then drive the final stretch to England unseen below the surface and emerge on the invasion beach to the enemy's complete surprise. As August drew to a close, 168 tanks had been converted. The Schwimmpanzer II was also developed – an adapted Panzer that had two buoyancy tanks fitted to its sides, enabling it to float to shore.

According to Colonel Max Dennerlein of Engineer Battalion 47, the engineers tried to make something useful out of almost anything that could float:

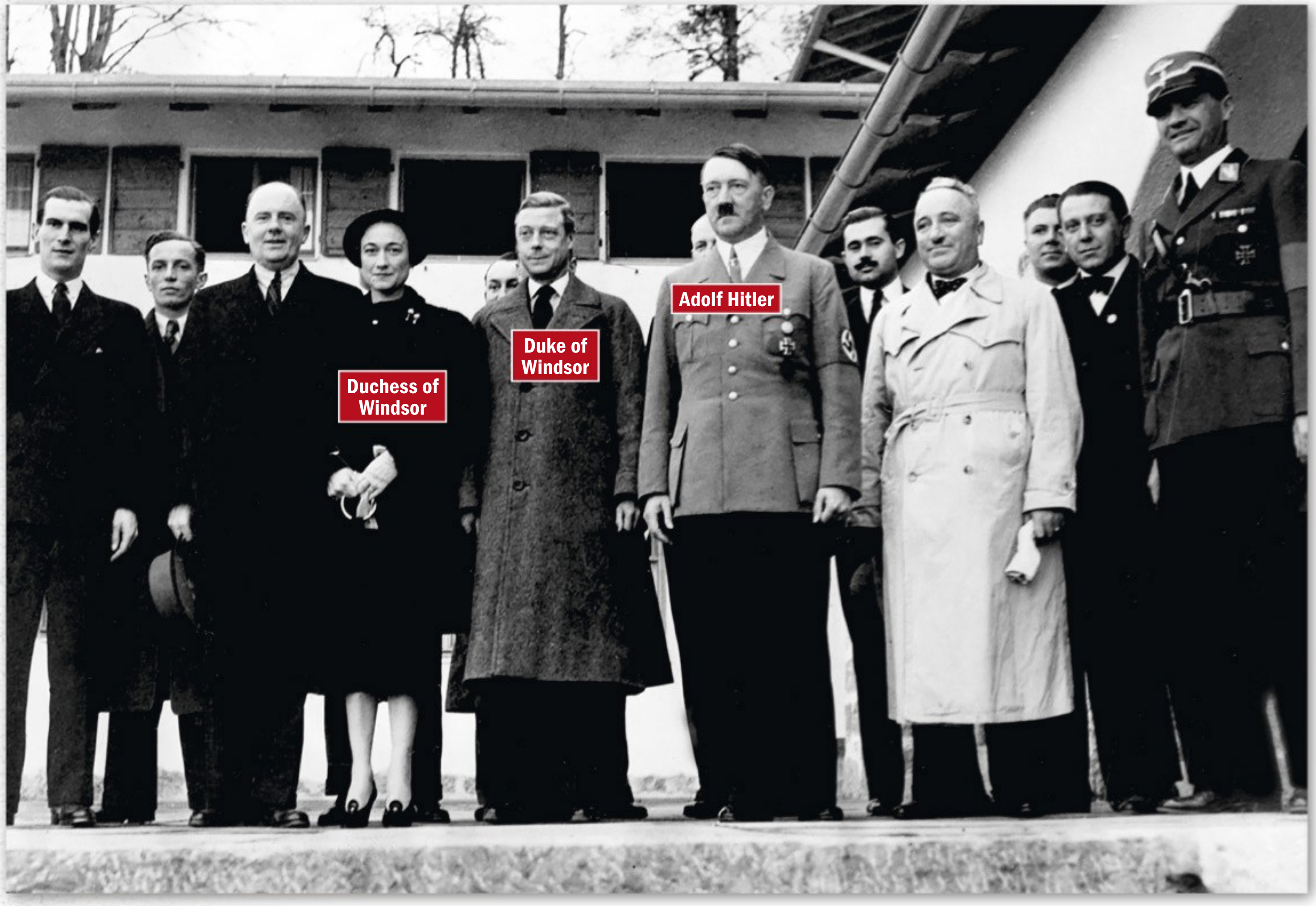
"Anything and everything that would float was commandeered ... Combing Rouen produced numerous wine barrels and a French Army engineers depot yielded watertight kapok-filled floats covered in sailcloth, which had belonged to French infantry assault bridges. Petrol drums also came in handy. Once everything was collected, the rafts were built. The thorniest problem was finding the correct size beams, since there were no suitable trees in the nearby forests."

The invasion forces had to carry men and artillery on the rafts across the Channel. Some of the barges and improvised rafts could not sail under their own power, but had to be towed by other vessels. The fleet, therefore, included several tugs. By mid-August, the ▸

FACTS

Fifteen years after the war, an anonymous ex-Nazi said that the German invasion plans included an **Aryan breeding programme** in Britain. Thus, women of childbearing age were to be gathered in 12 English country houses and serve as sex slaves for virile Germans. It should be noted, however, that no surviving Nazi documents can confirm this.

Operation Sealion must not be cancelled. The British must be kept insecure. ■ **Erich Raeder, German Grand Admiral.**



The Duke of Windsor, *who abdicated the British throne in 1936, was allegedly destined to be reinstated as king by the Nazis after the invasion.*

German naval engineers felt ready to test the rafts for the first time. The trial took place at the coastal town of Carteret, which was sheltered behind a small peninsula from which the soldiers could sail about 20 kilometres across the sea to German-occupied Jersey.

"The first convoy with the makeshift ferries sailed for Jersey in good weather and in reasonably calm seas. Aside from the fact that some of the men became seasick and several of the wine barrels came adrift from their wire bindings, there were no untoward events. However, during the long sea crossing the kapok sacks absorbed so much water that some rafts were barely able to limp back to Carteret. These rafts had reached their limits, but the rafts made of petrol tanks appeared to be suitable for transport of troops or as a platform for light guns in calm seas," Colonel Max Dennerlein concluded about the attempt.

But the English Channel wasn't known for its calm waters and cloudless skies. And like the converted barges, the rafts were unsuitable for crossing the Channel in rough conditions.

The vessels *"had no stability in water and tossed about in a sickening motion even in the most moderate of seas"*, German soldier Alexander Hoffer reported.

It soon became apparent that the voyage to Jersey had been blessed with particularly favourable weather conditions, and that the optimism about the rafts' ability to cross the Channel was highly questionable. At Boulogne-sur-Mer, near the stretch of coast where the Channel is narrowest, the generals called for a major exercise in mid-August involving 50 barges and a score of other vessels as a sort of dress rehearsal for S-day. Expectations were high, but as the exercise progressed, Admiral Theodor Krancke became increasingly dismayed at the outcome:

"The barges did not come far enough up the beach, the troops had to go into the water up to their breasts, and reached the shore soaked through and in completely broken order. Guns, ammunition and transport reached dry land only after a long struggle, if at all. The defence could have wiped out the entire landing force with a few machine guns."

British fortified Dover

Across the Channel, the British had feared an invasion ever since the evacuation from Dunkirk. The threat grew when, in mid-August, the British decoded a secret German report ordering there to be no bombing of southern English ports, and describing landing exercises with pontoons and vessels made of barrels at Carteret. The British generals therefore ordered the coastal defences reinforced – especially around Dover. Until September, Dover had been protected by eight guns; now the army deployed 13 more. In the sea along the coast, the British also laid a belt of mines, and in flat coastal areas, engineers dug traps and set up obstacles to slow German tanks.

In September, RAF bombers were also successful in hitting parts of the German invasion fleet, culminating in the bombing of Dunkirk on 18th September 1940. The full moon gave the pilots enough visibility to destroy 83 barges.

Since the war, historians have speculated whether Hitler's talk of invading Britain was nothing more than an empty threat. In any case, as early as 14th August, the Führer mentioned in a conversation with Grand Admiral Raeder that the threat would continue even if Operation Sealion itself was never launched.

Throughout the late summer and autumn, Hitler kept postponing S-Day. At first, it was because the invasion fleet was not ready. But the phases of the moon, which governed the tides, were also used as an excuse to postpone the amphibious assault. On 4th September, during a speech in the Berlin Sportpalast, Hitler assured his jubilant audience that the invasion of Britain was just around the corner:

"In England, they're filled with curiosity and keep asking, 'Why doesn't he come?' Be calm, be calm. He is coming! He is coming!"

Shortly after, the attack was postponed because the four preconditions for the invasion had not been met.

"The present situation in the air battle is not conducive to implementing Operation Sealion, as the risks are too great," Raeder wrote to Hitler on 13th September, also stressing: *"Operation Sealion must not be cancelled. The British must be kept insecure. Cancellation of the landing would take a great deal of the pressure off Britain."* In his memoirs, Raeder claimed he did his best to avert a landing that he'd been sceptical about from the start.

On 19th September 1940, Hitler decided to disband the steering committee of Operation Sealion, which could have been interpreted as a death blow to the plan, but he did not kill it entirely. In the navy, soldiers were ordered to disperse the invasion vessels over a wider area – and away from the coast, where they had been lying rail to rail in the harbours. In November 1940, German troops conducted a few landing exercises, but otherwise the attack plans went into hiatus over the winter. Operation Sealion remained where it had been conceived: on the drawing board.

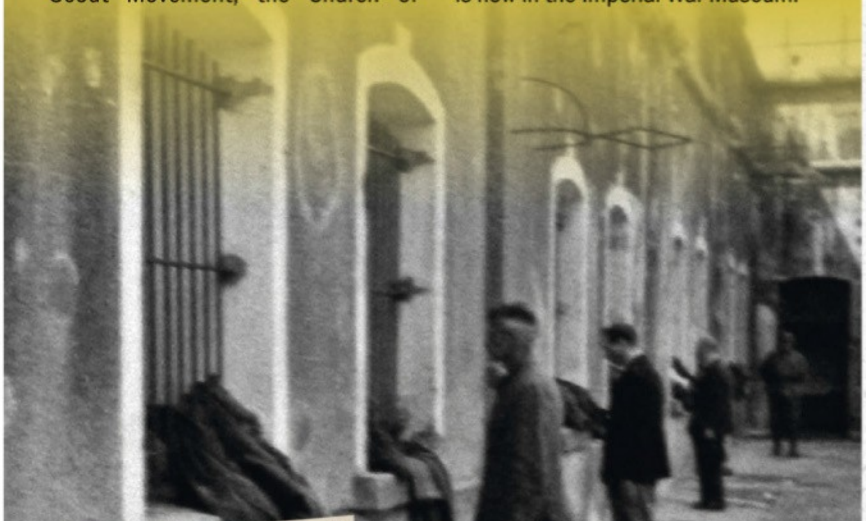
Instead, the Battle of Britain was now to be fought in the skies above the Channel. ■

German Black Book listed 2,820 Britons

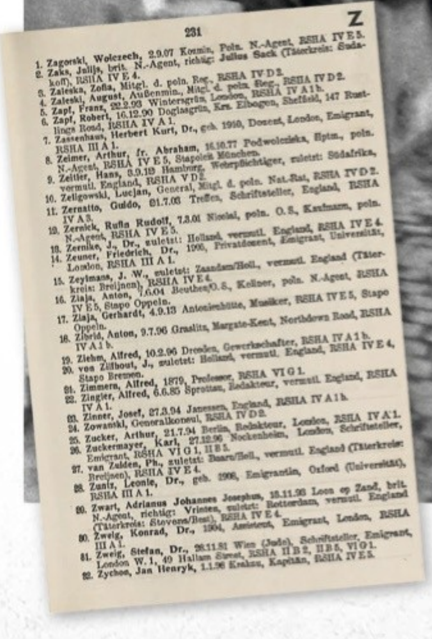
In the event of Britain falling to Germany, the SS stood ready with a plan to arrest and intern thousands of people living in the occupied country.

As many as 2,820 people who were either British or living in exile in Britain were in danger of falling into the clutches of the Gestapo if the Germans succeeded in capturing the country. While the army, navy and air force were preparing for Operation Sealion, senior SS officers drew up a list of dangerous people to be arrested as soon as possible – including editors, writers, professors and military figures, as well as Winston Churchill. The list was called the Black Book and it also identified organisations that were perceived to be a threat, such as the Scout Movement, the Church of England and Masonic lodges. The Black Book was a supplement to the *Informationsheft GB* (Information Brochure Great Britain), which detailed the nation's geography, administration, education system, press, religion, ethnic groups and economy.

According to documents found after the war, 20,000 copies of the brochure, including the Black Book, were printed for distribution to SS troops in Britain. But the warehouse where the books were stored went up in flames during a bombing raid and only two copies survived the war. One is now in the Imperial War Museum.



Influential Britons *could expect a visit from the Nazis and to be subjected to the same fate as their counterparts in occupied Europe.*



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1. Zagorski, Wojciech, 2.9.07 Kosmin, Poln. N.-Agent, RSHA IV E 5.
2. Zaks, Julija, brit. N.-Agent, richtig: Julius Sack (Täterkreis: Suda-
koff), RSHA IV E 4.
3. Zaleska, Zofia, Mitgl. d. poln. Reg., RSHA IV D 2.
4. Zaleski, August, Außenmin., Mitgl. d. poln. Reg., RSHA IV D 2.
5. Zapf, Franz, 22.2.93 Wintersgrün, London, RSHA IV A 1 b.
6. Zapf, Robert, 16.12.90 Doglasgrün, Krs. Elbogen, Sheffield, 147 Rust-
lings Road, RSHA IV A 1.
7. Zassenhaus, Herbert Kurt, Dr., geb. 1910, Dozent, London, Emigrant,
RSHA III A 1.
8. Zeimer, Arthur, fr. Abraham, 16.10.77 Podwoloczyska, Hptm., poln.
N.-Agent, RSHA IV E 5, Stapoleit München.
9. Zeitlier, Hans, 3.9.19 Hamburg, Wehrpflichtiger, zuletzt: Südafrika,
vermutl. England, RSHA V D 2.
10. Zeligowski, Lucjan, General, Mitgl. d. poln. Nat.-Rat, RSHA IV D 2.
11. Zernatto, Guido, 21.7.03 Treffen, Schriftsteller, England, RSHA
IV A 3.
12. Zernick, Rufin Rudolf, 7.3.01 Nicolai, poln. O.S., Kaufmann, poln.
N.-Agent, RSHA IV E 5.
13. Zernike, J., Dr., zuletzt: Holland, vermutl. England, RSHA IV E 4.
14. Zeuner, Friedrich, Dr., 1905, Privatdozent, Emigrant, Universität,
London, RSHA III A 1.
15. Zeylmans, J. W., zuletzt: Zaandam/Holl., vermutl. England (Täter-
kreis: Breijnen), RSHA IV E 4.
16. Ziaja, Anton, 7.6.04 Beuthen/O.S., Kellner, poln. N.-Agent, RSHA
IV E 5, Stapo Oppeln.
17. Ziaja, Gerhardt, 4.9.13 Antonienhütte, Musiker, RSHA IV E 5, Stapo
Oppeln.
18. Zibrid, Anton, 9.7.96 Graslitz, Margate-Kent, Northdown Road, RSHA
IV A 1 b.
19. Ziehm, Alfred, 10.2.96 Dresden, Gewerkschafter, RSHA IV A 1 b.
20. von Zijlhout, J., zuletzt: Holland, vermutl. England, RSHA IV E 4,
Stapo Bremen.
21. Zimmern, Alfred, 1879, Professor, RSHA VI G 1.
22. Zingler, Alfred, 6.6.85 Sprottau, Redakteur, vermutl. England, RSHA
IV A 1.
23. Zinner, Josef, 27.3.94 Janessen, England, RSHA IV A 1 b.
24. Zowanski, Generalkonsul, RSHA IV D 2.
25. Zucker, Arthur, 21.7.94 Berlin, Redakteur, London, RSHA IV A 1.
26. Zuckermayer, Karl, 27.12.96 Nackenheim, London, Schriftsteller,
Emigrant, RSHA VI G 1, II B 5.
27. van Zulden, Ph., zuletzt: Baarn/Holl., vermutl. England (Täterkreis:
Breijnen), RSHA IV E 4.
28. Zunz, Leonie, Dr., geb. 1908, Emigrantin, Oxford (Universität),
RSHA III A 1.
29. Zwart, Adrianus Johannes Josephus, 18.11.98 Loon op Zand, brit.
N.-Agent, richtig: Vriesen, zuletzt: Rotterdam, vermutl. England
(Täterkreis: Stevens/Best), RSHA IV E 4.
30. Zweig, Konrad, Dr., 1904, Assistent, Emigrant, London, RSHA
III A 1.
31. Zweig, Stefan, Dr., 28.11.81 Wien (Jude), Schriftsteller, Emigrant,
London W. 1, 49 Hallam Street, RSHA II B 2, II B 5, VI G 1.
32. Zychon, Jan Henryk, 1.1.98 Krakau, Kapitän, RSHA IV E 5.

RAF gambled on bombing the enemy

By Amanda Lee Edelstein

After World War I, the Royal Air Force laid out a new strategy, the core of which would be long-range bombers. Rebels in the British Empire and war enemies would be subjected to massive bombing raids. In return, fighters would take a lesser role – until Hitler was on the doorstep.

Can you tell us how the RAF was structured just after its foundation in 1918?

The Royal Air Force was founded on 1st April 1918, while World War I was still raging. Upon its creation, the RAF became the world's first independent air force. Until then, aircraft and pilots had been attached to the army and navy. With this step, the British became pioneers in aerial warfare. When the war ended, the Royal Air Force was reduced in size but managed to survive as an independent branch, despite the efforts of the Royal Navy and the British Army to abolish it. The two branches planned to disband the RAF because they wanted the air force and its capabilities under their command.

The RAF concentrated on policing British overseas territories and on the development of long-range bombers during the interwar years. Unlike most other major air forces, there was little focus on supporting land or sea forces.

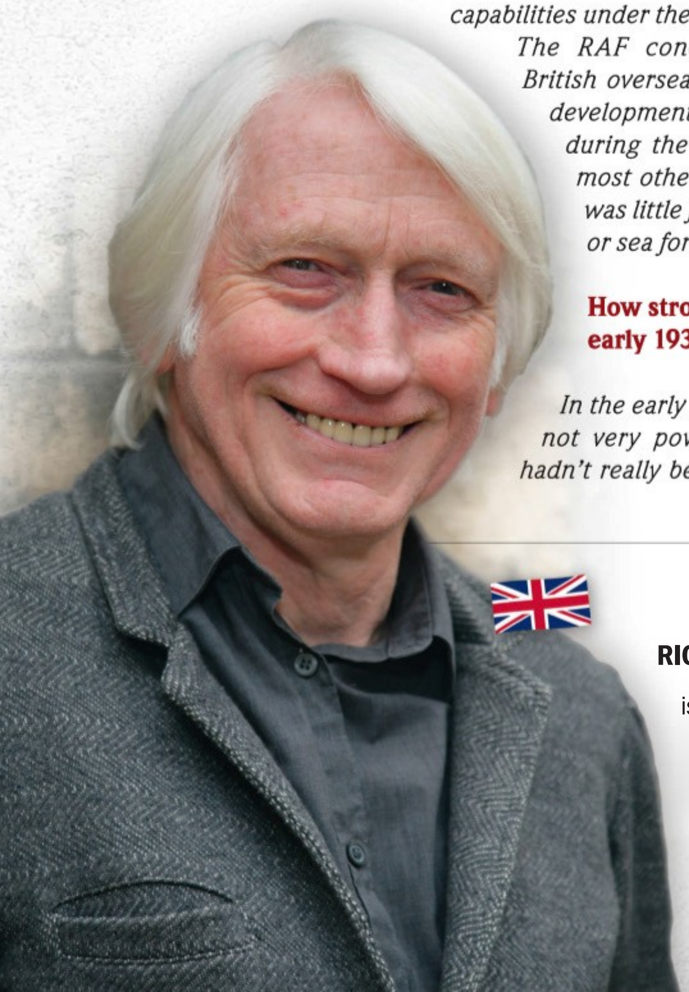
How strong was the RAF in the early 1930s?

In the early 1930s, the RAF was still not very powerful – aerial warfare hadn't really been put to the test since 1918, and the RAF was mainly used to police and maintain law and order throughout the empire. There, British bombers (which were at the height of technological development) were used to bomb and terrorise rebels, because an air force was cheaper to use than sending an army into the far reaches of the empire.

In Britain, the RAF led the air defence of the homeland, but had far too few fighter squadrons to be a serious deterrent. It is worth remembering that in the early 1930s, France was seen as the greatest threat to British security. And the government and RAF leadership even raised the possibility of bombing Paris in the event of a serious crisis between the two countries, which had traditionally been arch-enemies.

Did the focus shift to strengthening the air force as Germany grew stronger, or did the British still rely mostly on the navy?

As Hitler's Germany became a clear and serious threat to European security in the second half of the 1930s, all British forces began to rearm. In particular, the British poured a lot of money into the technological development of new, fast monoplane aircraft. The RAF also began planning the development of a long-range bomber to replace the primitive planes it had available. The new aircraft were developed to attack the Soviet



RICHARD OVERY (1947-)

is an honorary research professor at Exeter University. Overy has written several books on the history of the RAF and the battle between the Axis and Allied powers for control of the skies during World War II. His latest book, *Blood and Ruins: The Great Imperial War 1931-1945,* was published in August 2021.

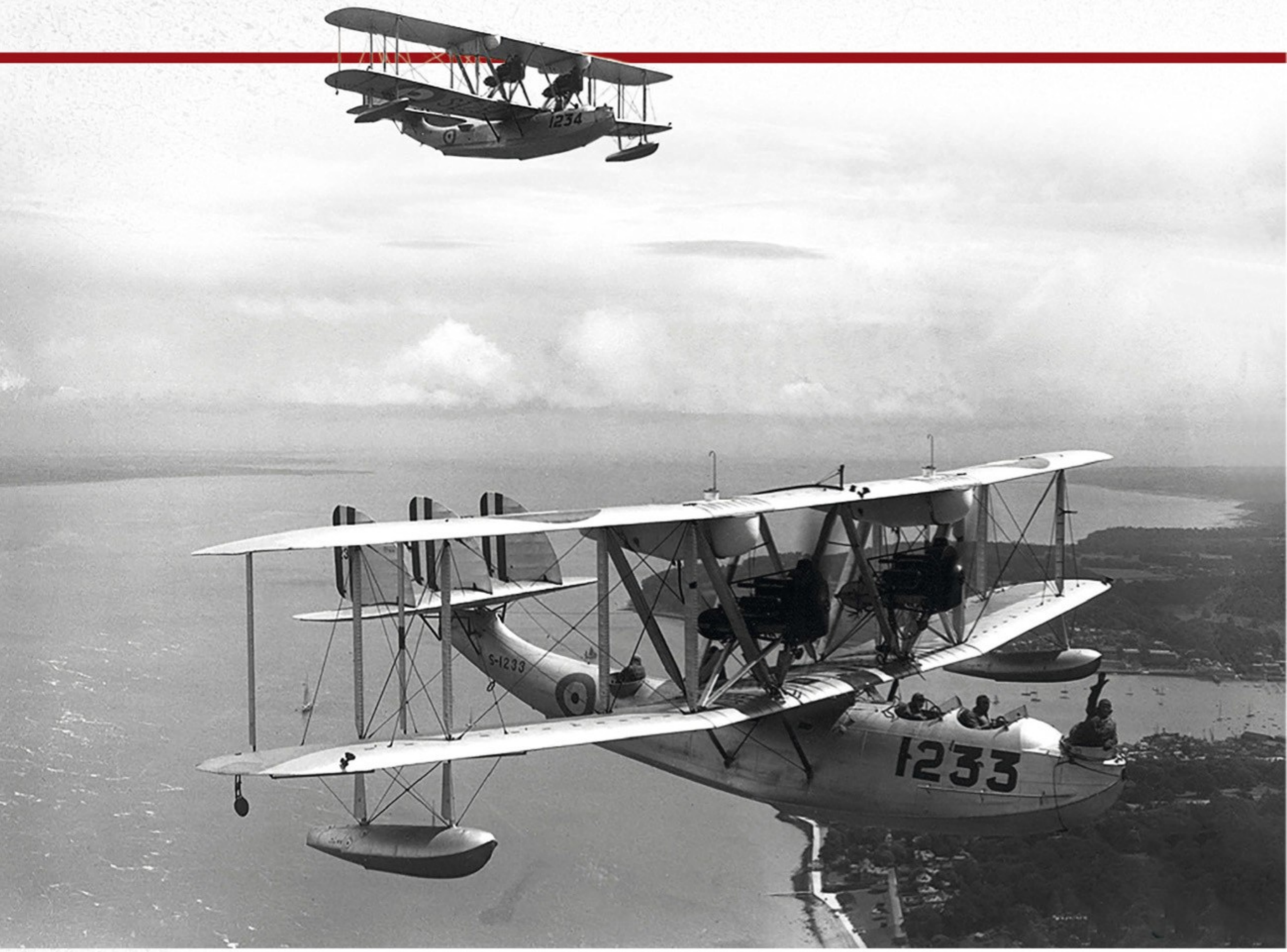
German Zeppelin ***attacks during WWI alerted the British to the dangers that could come from the air, yet the RAF was downsized following the war's conclusion.***

Union, which was considered a serious threat, and to protect the empire over longer distances. From 1937, with Chamberlain as prime minister, air defence was given top priority, although the Royal Navy still received a large share of the arms budget. Radar was under development from late 1935, and when the RAF established Fighter Command in 1936, the defences that would be used in the Battle of Britain began to take shape.

Were the Germans superior to the British in the air at the start of the war?

The Luftwaffe was certainly stronger in some respects than the RAF, because the Germans had focused on operational air warfare to support their army campaigns. They had developed their air force to defeat enemy airpower before throwing bombers, dive-bombers and fighters into the mix in support of troops on the ground. So, a large proportion of the Germans' aircraft were fighters, designed to take down enemy air units before other aircraft were deployed.

The RAF had no such strategy and no dive-bombers or other planes or tactics to support the army and navy. When the RAF fought in the Battle of France in May 1940, it was ineffective against the much larger and tactically more capable German Luftwaffe. However, the RAF was able to fight a defensive war while conducting long-range bombing raids that began months before the German Blitz on Britain, in May 1940. These raids, which were part of the British strategy and for which aircraft factories had developed bombers, were effective from the start. The Luftwaffe had only planned offensive air combat and had not yet developed an effective air defence. The Germans were not fully prepared for Britain's long-range bombing campaign. It could be said that the two air forces each had an advantage because their strategic planning had been different. Neither was▸



Aircraft manufacturer Supermarine ***specialised in flying boats. In 1931, it was commissioned to develop a brand-new aircraft, the Spitfire, which would become World War II's most famous plane.***

better than the other across the whole air warfare spectrum, but each was superior in some areas.

Where were the strengths of the two nations? Was it the type of aircraft, production, manpower experience or tactical ability?

Apart from the different strategic profiles of the two forces, differences also permeated the organisations themselves. The Luftwaffe was organised into air fleets combining fighters, bombers, dive-bombers and reconnaissance aircraft. Each air fleet was usually assigned to support an army group. In Britain, the air force was organised by function – Fighter Command, Bomber Command and Coastal Command. The commands could work together, but rarely did. The RAF initially fought its own battle – as did the navy and army. German pilots also had more training experience and German technology was generally better, with more advanced navigation systems and superior aircraft. But the difference was not so great that the RAF could not inflict serious damage on the enemy.

How did the British manage to train so many pilots in such a short time just before and at the start of the war?

From 1938, the British realised the gravity of the situation and the RAF expanded its training programme in anticipation of an international crisis. The training of pilots was a lengthy process, which depended in part on help from Canada, where the British Commonwealth Air Training Plan (BCATP) was established in 1939. Over time, the programme trained more than 100,000 crew members. The need to train new pilots quickly meant that British pilots received fewer training hours than Germans. As a result, many RAF pilots were more inexperienced in combat than their German counterparts.

> There is no doubt that the most important element of the British defence strategy was its highly effective communication. ■ Richard Overy

What was at the heart of the British defence strategy during the bombing of London from September 1940 to May 1941? And did the strategy work in your opinion?

There is no doubt that the most important element of the British defence strategy was its highly effective communication. The clear lines of communication were developed in the last years of peace and during the first half of 1940. Quite simply, RAF Fighter Command was coordinated by a central command centre, which was headed by Air Chief Marshal Hugh Dowding, who had telephone links across the entire fighter force. The command centre received intelligence of enemy attacks directly from the newly constructed radar chain, as well as reporting posts down on the ground, whose members passed on details of the enemy's route once they had crossed the coast.

The communications network meant that RAF pilots could take to the air at the right time and place to intercept the enemy – rather than wasting precious time and fuel on patrolling the skies. When German aircraft were spotted, the information was immediately delivered to Fighter Command headquarters and then relayed almost instantly to fighter stations, allowing pilots to get airborne quickly. This took an average of four minutes and never more than 10, an extraordinary achievement, which meant that no German attack, even a small-scale one, escaped intervention. Communication, speed and defensive warfare were crucial to success in the Battle of Britain.

How important was the Royal Air Force's bombing of Germany?

The RAF bombing of Germany began in May 1940 and continued throughout the Battle of Britain on nights whenever weather conditions permitted. This is a part of the British bombing campaign that is almost always forgotten. The German bombing from September 1940 was partly a response to the RAF raids, which provoked widespread fear and anger among the population in western Germany, where the British bombing was concentrated. The attacks on Germany did no decisive physical damage, but they did seriously affect the spirits of the German public. Most British bombers could not locate the main target or bomb with any accuracy when they did find it. Research has shown that the British population paid close attention to the RAF attacks, which were important for morale.

The attacks on Germany were carried out because they were central to the Royal Air Force's long-term strategic thinking, which stemmed from years of preparation for bombing the enemy. But unlike Fighter Command, Bomber Command was not sufficiently developed or modern enough to execute the bombing missions effectively.

Let's focus a little on the British fighters. Which aircraft would you single out as the best and why?

The consensus has always been that the Supermarine Spitfire was the best aircraft available in 1940. And I share that opinion. The more common Hawker Hurricane was a robust and fast fighter plane, but not as fast as the Spitfire. The Hawker Hurricane also suffered from a weakness in that it easily caught fire during attacks, because the fuel tank was not properly protected. The Spitfire's trump card was its Rolls-Royce Merlin engine, perhaps the most efficient wartime aircraft engine, and a special high-octane fuel that improved performance compared to the German Messerschmitt Bf 109, in which the octane level was lower. Spitfires also had a tighter turning circle than the Bf 109 in combat, which was tactically advantageous.

In Britain, the Spitfire has become an icon. The plane has come to define Britain's air effort in World War II and it certainly saved the country in the Battle of Britain during the bleak summer of 1940. ■

The Heyford *was the RAF's most widely used bomber in the 1930s. The biplane was phased out in 1939, at the outbreak of war.*

Hitler’s dreams of subjugating Britain *were crushed by just 3,000 British pilots. During the 114 days of the Battle of Britain, the RAF’s morale was tested to the limit.*

> Here they come. The Germans are coming in an absolute steep dive, and you can see their bombs actually leave the machines and come into the water.

BBC journalist Charles Gardner in a live radio report

BATTLE OF BRITAIN

To clear the way for an invasion of Great Britain, Hermann Göring ordered the bombing of Royal Air Force bases and the destruction of every British fighter plane in the summer of 1940. Up to five times a day, British pilots had to engage in fierce aerial combat that nearly brought the RAF to its knees.

By Mette Iversen

Grey clouds had been hanging like a thick blanket over the English Channel in early July 1940, but by midday on 10th July, the weather finally cleared and the sun burned through the cloud cover. The sky opened up, clear and blue. For Royal Air Force pilots, however, the change in weather in the summer of 1940 did not promise seaside trips and sunbathing; rather, it was a sure sign that German bombers would soon be taking to the wing and using the fresh visibility to attack convoys in the English Channel. At British radar stations along the coast, operators soon saw evidence of enemy bombers heading for a convoy in the Strait of Dover, and teams at the coastal stations hurriedly sent word to their command centre. From there, the alarm was relayed to RAF airbases in seconds, and a few minutes later, the first British pilots settled into the cockpits of their Spitfire and Hurricane fighters – ready to defend the convoy against the Germans.

One of the pilots was John Thomson, who shortly afterwards spotted a formation of enemy aircraft approaching in the skies over the Channel. At the sight of the British fighters, the unprotected German bombers turned in fright, while Thomson took up pursuit and pulled the trigger on his machine guns. The British pilot fired a volley of shots and soon saw a German plane drop out of formation and plunge towards the deep, dark sea below.

The scenario was typical of the fighting over the Channel in July 1940, with the Germans targeting Allied ships. Luftwaffe pilots managed to sink one of the ships in the convoy during the attack, but the battle on 10th July still ended in victory for the RAF, whose pilots shot down 13

Churchill boosted British morale

After the German victory in France, the British were demoralised and outgunned. But Churchill revived the fighting spirit with his speeches.

"We shall defend our island, whatever the cost may be," resounded the words of Prime Minister Winston Churchill as he addressed the House of Commons on 4th June 1940. That day, the last British soldiers had left the beach in the northern French town of Dunkirk after a disastrous defeat to the Germans, and the British knew that Britain would be the next battleground unless it surrendered on German terms. Britain's situation was desperate, but Churchill's oratory gave the British faith that the fight against the Nazis could and must be won, and the Germans might have won a battle but not the whole war.

"We shall fight on the beaches, we shall fight on the landing-grounds, we shall fight in the fields and in the streets, we shall fight in the hills. We shall never surrender!" Churchill promised, and with that, the country's sailors, ground troops and pilots set about preparing for the defence of the British Isles. Two weeks later, Churchill sketched out what would happen if Britain were to lose the war:

"If we fail, then the whole world, including the United States, including all that we have known and cared for, will sink into the abyss of a new Dark Age made more sinister, and perhaps more protracted, by the lights of perverted science. Let us therefore brace ourselves to our duties, and so bear ourselves that if the British Empire and its Commonwealth last for a thousand years, men will still say, 'This was their Finest Hour.'"

Winston Churchill had an unshakeable belief *in victory for the British, even though the situation looked hopeless after the defeat at Dunkirk.*

German aircraft, while the British themselves lost only six of the 40 Spitfires and Hurricanes that had been involved. On his way back to the airbase, fighter pilot Pete Brothers of 32 Squadron had a clear view of the English coast and could see that the fighting against the Luftwaffe had not yet reached the English mainland, but was continuing high in the sky out over the Channel.

He was somewhat annoyed when he flew back after patrolling the convoy, having kept German aircraft away, and looked down over the beaches. He could see scores of girls in swimsuits sunbathing and felt like shouting out to remind them there was a war going on, and they should join the fight. The difference between the girls and himself was striking. He was in the middle of a battle while they were relaxing and enjoying life.

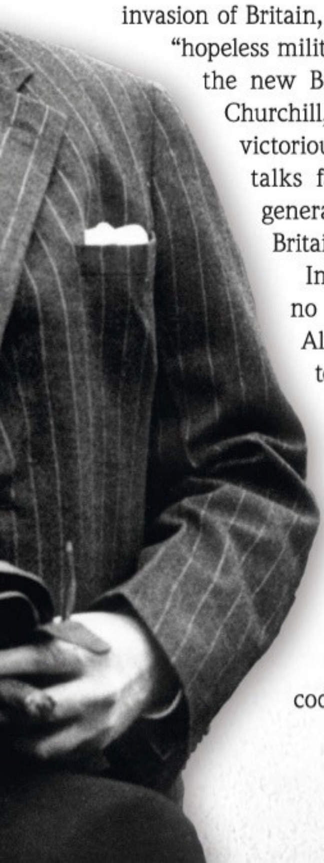
Although German bombers had previously attacked convoys in the English Channel, the British officially designated the fighting on 10th July as the first air battle of the 114-day campaign that would become known as the Battle of Britain.

RAF bases to be razed to the ground

Just over two weeks had passed since France had surrendered, and in Germany, the Führer was drunk on victory. Poland, Norway, Denmark, Holland, Luxembourg and Belgium were defeated. The Soviet Union was cooperating with the Germans, and the United States was still electing to stay out of the war. Britain was the last thorn in the side of a Europe under Nazi control. Hitler had on several occasions made appeals to the British to make peace on Germany's terms or suffer the consequences.

The Nazi leader did not want to waste energy on an invasion of Britain, which the Führer said was in a "hopeless military position", and he hoped that the new British prime minister, Winston Churchill, would fall to his knees before the victorious Reich. If the invitation to peace talks failed, however, Hitler and his generals would not hesitate to fight Britain on land, at sea and from the air.

In Downing Street, Churchill had no intention of bowing to Hitler. Although his troops had been forced to leave 2,472 guns, 445 armoured cars, nearly 64,000 military vehicles, 20,548 motorcycles and 68,000 tonnes of ammunition in German-occupied France during the evacuation from Dunkirk in June, Churchill vowed that the British would never surrender.



In the German invasion plan, code-named Operation Sealion, the annihilation of the British air force, the RAF, was the central prerequisite for taking the kingdom across the Channel. Another key to victory was to cut the supply lines to Britain so that the British would be starved into defeat. From German airbases in newly captured northern France, the Luftwaffe's targets were therefore initially the supply convoys in the English Channel and, to some extent, the airbases in southern England, to destroy every British fighter.

With nearly 1,200 fighter planes, the Luftwaffe seemed on paper to be superior to the RAF's mere 600 fighters. But the waters between the British Isles and mainland Europe gave the RAF an advantage: unlike British aircraft, German Messerschmitts had to sacrifice precious fuel to cross the Channel. At home, British Spitfires and Hurricanes could use their range for effective combat. German pilots' fear of running out of fuel on their way back across the Channel was so widespread that the term "channel sickness" arose. Symptoms of the condition included upset stomach, ulcers, nausea and dizziness – and would today be diagnosed as stress and burnout. Werner Karl of the German squadron Jagdgeschwader 53 described the symptoms:

"There was no talk about fear or being taken prisoner. At least, nobody admitted if he was scared. All around us, we saw heroes both in the newspaper and on the radio. I think that everybody thought he was the only one who was afraid. For example, our briefings were always held outside in the open air. Immediately after it finished and before we went to our planes, we all ran to the latrines and sat on the toilet. At first we thought it was sabotage but in fact it was fear."

British factories churned out planes

By May, as German troops roared through France, Churchill knew Britain was the next target, so set ▸

Flying ace Robert Tuck *was one of the RAF's finest pilots, shooting down as many as 29 enemy aircraft by 1942.*

FACTS

Neither Nazi Germany nor Britain had a clear picture of each other's strength before the Battle of Britain. The **Luftwaffe underestimated** the number and production of British aircraft, while the RAF overestimated the number and production of German planes. The truth was that the RAF had fewer aircraft, but could replace lost machines more quickly than the Germans.

1940 **For three months, Britain fights for its survival. In the Brits' favour, the Germans suffer from bad intelligence and constantly change strategy.**

10/7 The Battle of Britain begins as German planes start attacking convoys carrying vital supplies to the British in the English Channel.

German fighter planes *are the British pilots' primary targets. Bombers are lower priority.*

up the Ministry of Aircraft Production to ensure the manufacture of new planes, so the British could turn the balance of power in the air to their advantage. The ministry ensured that the aircraft industry had priority access to raw materials, while other industries, such as car manufacturing, were ordered to contribute equipment and mechanical expertise.

The Hurricane fighter particularly attracted the ministry's interest because it could be mass-produced easily and quickly. Unlike the Spitfire, with its solid metal fuselage, Hurricanes were constructed from a metal skeleton covered with canvas. For every Spitfire built, aircraft manufacturers could supply 2.5 Hurricanes, and the opportunity to churn out cheap fighters was exploited to the full by the British.

From June to September, as many as 1,900 new fighters rolled out of British factories, while the Luftwaffe could only procure 775 Messerschmitts during the same period. So, although the British were initially outnumbered in the air, the balance tipped slowly but surely over the next few months. On the German side, Hermann Göring, commander of the Luftwaffe, had no reliable intelligence on enemy productivity and woefully underestimated the size of the RAF's aircraft fleet.

Confident of victory, Göring therefore sent daily squadrons in search of convoys that could be sunk and airbases that could be bombed. BBC journalist Charles Gardner was on the southern English coast on 14th July and witnessed one of the daily tests of strength over the Channel. In a live radio report, he commented on the exchange of blows.

"The Germans are dive-bombing a convoy out at sea," Gardner's excited voice rang out over the airwaves. *"There are one, two, three, four, five, six, seven German dive-bombers, Junkers 87s. There's one going down on its target now. Bomb! No! He missed the ships. It hasn't hit a single ship. There are about ten ships in the convoy, but he hasn't hit a single one. Now the British fighters*

13/8 The Luftwaffe changes strategy and now orders German aircraft to target British airbases.

7/9 Anger at a British air raid on Berlin causes the Germans to change strategy again. Now planes are to drop their bombs on London.

15/9 On what became known as Battle of Britain Day, the RAF beats back a huge German attack and halts an invasion.

are coming up. Here they come. The Germans are coming in an absolute steep dive, and you can see their bombs actually leave the machines and come into the water. You can hear our guns going like anything now. I am looking round now. I can hear machine gunfire, but I can't see our Spitfires. They must be somewhere there. Oh! Here's one coming down. There's one going down in flames. Somebody's hit a German and he's coming down with a long streak, coming down completely out of control … A long streak of smoke. And now a man's baled out by parachute. The pilot's baled out by parachute. He's a Junkers 87, and he's going slap into the sea. And there he goes. Smash! A terrific column of water."

Inexperienced pilots had to fly

Although the British prevailed in this instance, the situation was desperate. British factories may have produced more aircraft than the Germans, but pilots could not be replaced as easily. In the first weeks of the Battle of Britain, 120 British pilots fell to the enemy, and the RAF had to fill the ranks with inexperienced young men. The average age of a fighter pilot in 1940 fell to 20, and the majority were sent into combat after only a few hours of training.

"We were getting pilots who had not been on Spitfires … They came straight to a squadron from their training establishments. Some of them did have a few hours on the Hurricanes, a monoplane experience, but not on the Spitfire. For example, we got two young New Zealanders into my flight. Chatting to them I found they'd been six weeks at sea coming over. They were trained on some very outdated aircraft … out in NZ. One of the pilots had taken them up to see the handling and brief them on the Spitfire. Then they'd go off for one solo flight and circuit, then they were into battle. The answer of course is that they didn't last. Those two lasted two ▸

LUTON
302 CALEB
CALLA
LORAG
KEEP IT DARK
CARELESS TALK COSTS LIVES

Using radar, *an RAF control room monitors the position of friendly and enemy aircraft in the skies over Britain.*

FACTS

A large proportion of the 3,000 or so RAF pilots were not British at all. **Around 600** came from Commonwealth countries such as Australia and South Africa, or occupied countries such as Poland and Belgium. The Poles proved particularly adept pilots, and one Polish squadron alone shot down 126 German aircraft – more than any other unit.

trips and they both finished up in Dover hospital. One was pulled out of the Channel. One landed by parachute," recalled pilot Alan Deere, who, like many others, found that the green pilots could not replace seasoned aviators such as Josef František of the Czech Republic, Britain's Eric Lock and Brian Carbury of New Zealand.

The statistics revealed a clear trend. Eight out of ten shoot-downs were carried out by the RAF's most experienced pilots, but the question was how long those men could hold off the Germans without losing their lives – especially now dangerous new aerial combat tricks were being used. Traditionally, British pilots would fly up over enemy bombers from the front and then turn around and attack from the rear. But in the Battle of Britain, the RAF developed a bold new tactic, with squadrons heading straight for enemy aircraft as bullets hailed from the planes' machine guns. Terrified, German pilots often flew steeply upwards, making them even easier targets.

Germans bombed radar stations

The pilots' daring tactics helped the RAF shoot down as many as 82 aircraft between 10th and 23rd July, while the British lost only 45. By the end of July, even the confident Göring could see that the German effort was far from sufficient to put the British air force out of action, and the Nazi turned his attention away from the Channel convoys and concentrated on putting the RAF's early warning system out of action.

Indeed, one of the most important British weapons in the air campaign was the 29 radar stations that lined the coast from Wales in the west, down the south coast of England and up to the east coast of Scotland. With radars mounted on tall masts, the British could pinpoint the distance, altitude and course of German aircraft up to 80 kilometres away. Using the Chain Home system – which came to be known as the Dowding System after RAF commander Hugh Dowding – operators could alert command centres, which passed orders to bases so that fighters could be on the wing within ten minutes to defend the country.

The radar system could track German aircraft until they reached the coastline, then to cover the airspace over land, 30,000 volunteer observers kept an eye on the skies and sent information about aircraft to the command centres via 1,000 observation posts. In the words of pilot Bob Foster, *"the thing that really saved us was radar"*. The warning system was superior to that of the Germans, and it was this advantage that Göring now wanted to destroy. On 12th August and for 11 days to come, the Luftwaffe undertook a targeted mission, code-named Operation Eagle Attack, to destroy the radar system. On the first day, Luftwaffe pilots attacked the radar stations along the south coast of England, and although technicians got the system working again after just a few hours, the Germans took advantage of the breakdown to send 220 bombers over Britain.

However, the crash could have been even more costly for the British if the Luftwaffe had had direct lines of communication between its fighters and bombers. Thus, as German Colonel Johannes Fink flew at the head of 74 Dornier bombers out over the Channel, he scouted in confusion for the escort of fighters that was supposed to protect his planes. For the moment, the clouds hid the bombers and the colonel decided to continue, but before he could drop his bombs, Spitfires and Hurricanes appeared ahead and quickly shot down five bombers, leaving the rest to turn back. Colonel Fink was fuming as he landed at the base in Cambrai, France. Where had his escort gone? The answer was that Luftwaffe headquarters had postponed the attack, but the message had only reached the fighters, who had no way to communicate with the bombers.

Over the next few days, Göring sent ever larger swarms of planes into the air. By 15th August, the outlines of as many as 2,200 German aircraft could be seen in the skies above the British bases. Tangmere airbase on the south coast and Kenley and Biggin Hill, south-east of London, were favourite targets for the Luftwaffe, whose deadly cargo turned hangars into ruins and runways into craters. British pilot William David of 213 Squadron was at the Tangmere base as German Stukas howled down over him.

"They were quite nasty attacks; they were very well planned and deliberate attacks, they were hitting hangars, buildings, everything and, of course, personnel ... This is one of these occasions when the German Stukas had just dive-bombed Tangmere with disastrous effect and killed lots of WAAFs [Women's Auxiliary Air Force] and wounded... And one of the Germans [prisoners of war] was seen to smirk. And the RAF commander hit him very hard to stop him laughing," he recounted.

Pilots flew on sandwiches

On 24th August, 20 German Stuka aircraft howled over Manston airbase on the south-east coast, shelling the hangars and runway, forcing the base to close completely and be used only as an emergency airstrip. Number 11 Group, tasked with defending London, could only take off from one of the group's seven bases in September, because the rest had been bombed beyond repair. By the end of August, the RAF pilots were collapsing from exhaustion. The men were scrambled – ordered into the air – up to five times a day, and a night's sleep was a rare luxury. Concentration and morale suffered from the lack of rest. One pilot from Biggin Hill fell into such a deep sleep that he did not even wake up when German bombs crashed over the base. His colleague, Denys Gillam, of 616 Squadron, fell asleep in the cockpit during a mission:

"One was called about four in the morning and you went down to dispersal in the half light, and breakfast was brought down to one. And then you generally scrambled about 07.00 or 08.00 for▸

Germany's air force was created in secret

After World War I, Germany was forbidden to have an aircraft fleet. This did not stop the Germans, however, and they secretly created an air force on Soviet bases.

In 1919, the Treaty of Versailles forbade the German army to have aircraft and pilots at its disposal. Five years later, Germany made a deal with the Soviet Union that allowed German pilots to secretly use an airbase at Lipetsk, 450 km south of Moscow. Here the pilots could train, and in return, German war engineers would contribute technical expertise to the development of Soviet aircraft. Pilots at the base were officially called the 4th Aviation Detachment of the Red Army. Other German pilots trained at the Soviet Union's official schools for pilots, and more than 450 Germans were secretly trained as fighter pilots in the Soviet Union. The Treaty of Versailles did not prohibit civilian flying, so other pilots trained with civilian aircraft on German soil. Only a month after Hitler came to power in 1933, he secretly founded Nazi Germany's new air force and appointed WWI air ace Hermann Göring to lead its build-up. On 26th February 1935, the Luftwaffe was officially created, even though the Treaty of Versailles still forbade a German air force. Now German factories ramped up production of bombers and fighters. Scores of Heinkel, Junker and Dornier aircraft rolled out of the factories, and Luftwaffe pilots had the chance to test their skills during the Spanish Civil War from 1936 to 1939, when the Condor Legion carried out strategic bombing of cities and military targets.

A secret airbase *in the Soviet Union allowed the Germans to build up a powerful air force.*

> **There were lights in front of me, and I couldn't make out what it was and I realised I was upside down and diving hard to the ground.** ■ **Denys Gilliam, British pilot**

the first raid. And then you came back, refuelled and rearmed, and they brought sandwiches down to one at the dispersal. And then you got scrambled again and had another battle, and probably a third in the afternoon or evening.

"And then towards dusk you would ease up and you were on readiness until just after dark. At the end of our tour, when there were only three or four of us, they were even asking us to night fly which was very hard because we really weren't getting enough sleep. And this was very hard. In fact, one night I went off after a raid and I think I went to sleep in the cockpit because, the next thing I knew, the speed was building up and there were lights in front of me, and I couldn't make out what it was and I realised I was upside down and diving hard to the ground."

RAF neared collapse

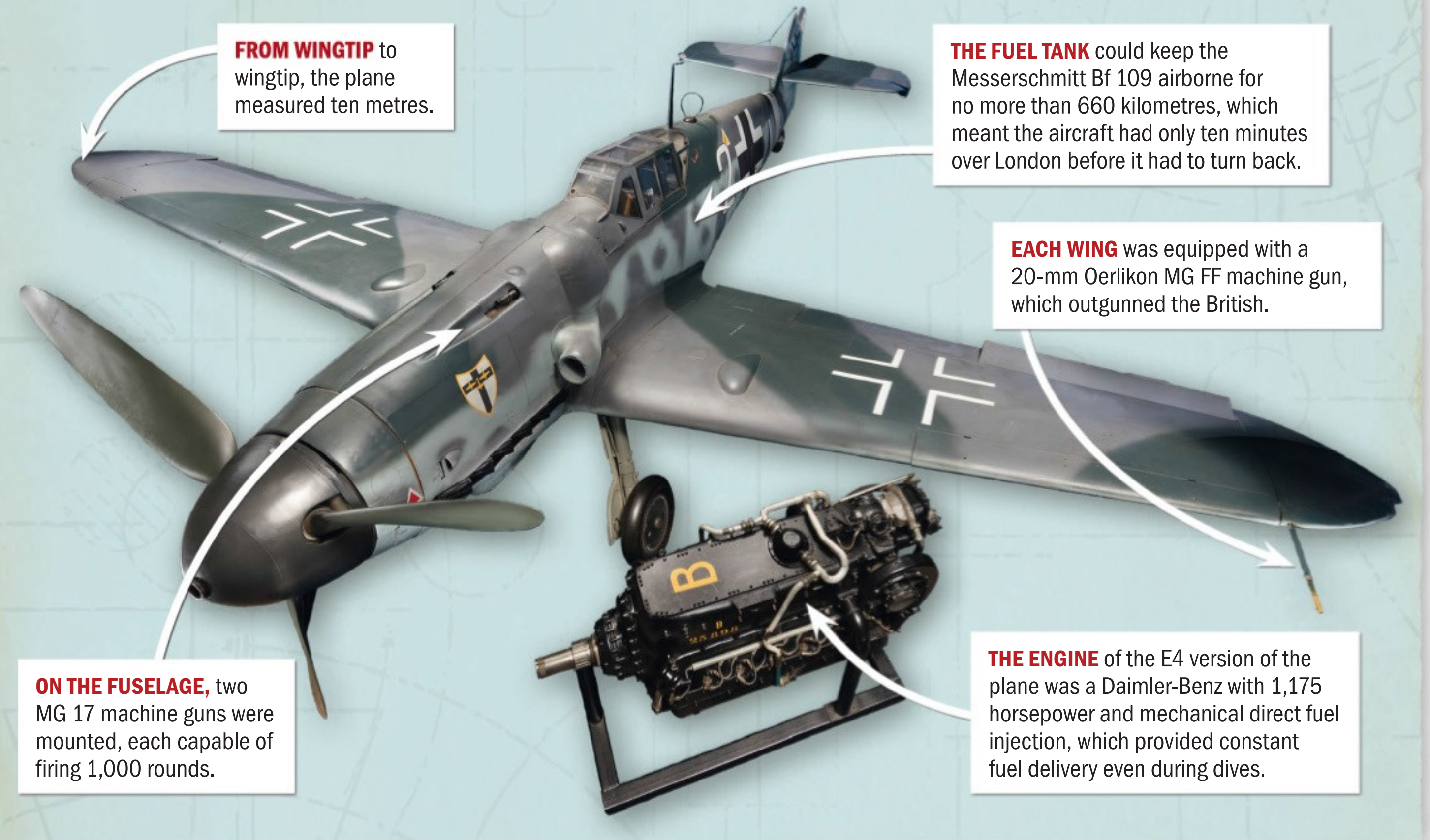
The more pilots the RAF lost, the more trips the survivors had to fly. Thus, during intensive raids, it was not uncommon for a downed pilot to return to base and take to the skies again the same day. Only the evenings were relatively calm. *"People would*

FIGHTER AIRCRAFT | Messerschmitt Bf 109

Bombers' lightning-fast protector

The top speed of the German Messerschmitt Bf 109 fighter was 600 kilometres per hour. Its speed and manoeuvrability quickly made it a feared opponent for British pilots.

The Germans' most popular fighter plane was called the Messerschmitt Bf 109, developed after Hitler came to power in 1933. Faster and better equipped than British fighter aircraft, it had one weakness: its range was so short that it had only ten minutes to carry out missions over London before having to return to its airbases in France. So, the British set about forcing Messerschmitt pilots into fuel-demanding battles and forcing the aircraft to return to base, leaving German bombers unprotected.



FROM WINGTIP to wingtip, the plane measured ten metres.

THE FUEL TANK could keep the Messerschmitt Bf 109 airborne for no more than 660 kilometres, which meant the aircraft had only ten minutes over London before it had to turn back.

EACH WING was equipped with a 20-mm Oerlikon MG FF machine gun, which outgunned the British.

ON THE FUSELAGE, two MG 17 machine guns were mounted, each capable of firing 1,000 rounds.

THE ENGINE of the E4 version of the plane was a Daimler-Benz with 1,175 horsepower and mechanical direct fuel injection, which provided constant fuel delivery even during dives.

buy you pints of beer when you went in the pub, which was all very welcome. I think that we were appreciated but I don't think people quite knew what it was all about. They all had their own jobs to do. I remember once when I was taking off from Croydon over the sports ground with tennis courts, people had stopped playing tennis and waved their racquets and I waved back at them and went on doing my job and they went on doing theirs," 20-year-old RAF pilot Bob Foster later recalled.

By August, the situation was perilous. The RAF was short of pilots and aircraft, and the crews were completely exhausted. One of the ways Churchill sought to honour and encourage the RAF's beleaguered personnel was with the immortal words that *"never in the field of human conflict was so much owed by so many to so few"*.

But not even the prime minister's pat on the back could erase the scars of more than a month and a half of air war. The pilots' bodies and minds cried out for rest. Hugh Dowding watched the death toll with great concern. From 26th August to 6th September, the Luftwaffe hit 273 RAF aircraft. George Unwin of the RAF's Number 19 Squadron was one of the pilots who encountered enemy bullets when a German Dornier plane attacked his fighter at an altitude of just over six kilometres:

"I suddenly saw his rear gunner shooting back at me with little red sparks – you can see. I didn't pay much attention to it, I just thought he would stop another one and carried on firing for quite a while, quite a long burst, when suddenly I was covered in smoke. To my horror a hole appeared … in front of my face. I thought, 'Good God, I must be dead or something, no blood, no nothing but I'm covered in smoke.' I thought I was on fire. So I whipped the hood back, undid my straps and started to get out. By this time I'd broken away and was going downhill. And I was halfway out of the cockpit, when I suddenly saw that smoke was coming from the top of the engine, through the engine cowling, which is where the glycol pipe is, the coolant pipe. It was a really browny colour, it wasn't black smoke and I could smell it, too, it was glycol. So I got back in and strapped myself in again, left the hood open and still went rapidly downhill in case somebody was following me and then started looking for a field and I found a field to land in. I waited until I'd found my field and got down to about 1,000 feet, dropped the ▶

The main fear of German and British pilots *was to be shot down over the Channel, where they risked drowning if the navy or fishing boats didn't pick them up quickly.*

undercarriage and did a forced landing in this field no trouble at all."

As George Unwin tumbled on to the field, he was met by two combat-ready soldiers in a jeep. But when they saw that the downed pilot was one of their own, their suspicion turned to friendliness. They got out a screwdriver and opened the hood. Sure enough, enemy projectiles had hit the radiator.

Emergency landing earned time off

Twenty-year-old Bob Foster's plane was also hit, and the young pilot briefly considered parachuting out. However, the machine was still controllable, so instead he looked around for somewhere to make an emergency landing. He saw an expanse of green field below him and brought the fighter safely to the ground. To his surprise, he found that he had landed on the runway at Gatwick Airport. When Bob Foster returned to the airbase, the comment from his superiors was: *"Take the afternoon off."*

However, far from all pilots were as lucky as Unwin and Foster, who despite being hit, were able to make emergency landings.

Hundreds of British pilots had to parachute out of their crashing planes, but this was no guarantee of survival either. The pilots risked drowning or freezing to death in the English Channel while waiting in vain for help. Over 200 pilots drowned in the sea during the Battle of Britain. Pilot Douglas Grice, for example, ended up in the Channel after fighting a duel in the

> Very shortly after that, I was over the coast and a few minutes later I was a mile out to sea, and then I was two miles out to sea. ■ **Douglas Grice, British pilot**

air over Harwich. That day, he was flying alone a few hundred metres above the rest of his squadron when he suddenly saw a bright flash of light on his left. The next moment, smoke billowed into the cockpit.

“The heat was enormous and I’d done two things absolutely instinctively. My left hand had gone to the handle of the hood, my right hand had gone to the pin of my harness … the next moment I was out in the open air. I’d made no attempt to jump out of that aircraft and of course I was straining back from the flames and the heat. And what I think had happened was, I was doing a left-hand turn and my aircraft had gone on turning over on its back and I’d just fallen out! Anyway, there I was falling away, and I did actually remember my parachute drill, which was of course to wait before pulling the ripcord for two or three seconds. And I pulled it and there was a jerk and there I was floating down with a marvellous canopy and about a couple of miles inland. I could look down and see the land, so I thought at least I won’t be going into the sea.

“Something seemed to have happened to my face – there were bits of skin flapping around my eyes! And my mouth felt very uncomfortable. Of course, I’d been burnt. Well, very shortly after that, I was over the coast and a few minutes later I was a mile out to sea, and [then] I was two miles out to sea. Well, the sea gradually approached and I wasn’t a bit worried because I was coming down, going to splash down, only a couple of hundred yards from a little fishing trawler … I waved like mad and it eventually arrived and they hauled me on board.”

The pilots often found empty seats in the mess because another comrade had died; 544 British ▸

The Polish Number 303 Squadron *became famous during the Battle of Britain. Its pilots, who fled the occupation of Poland in 1939, were responsible for the majority of shoot-downs of German aircraft.*

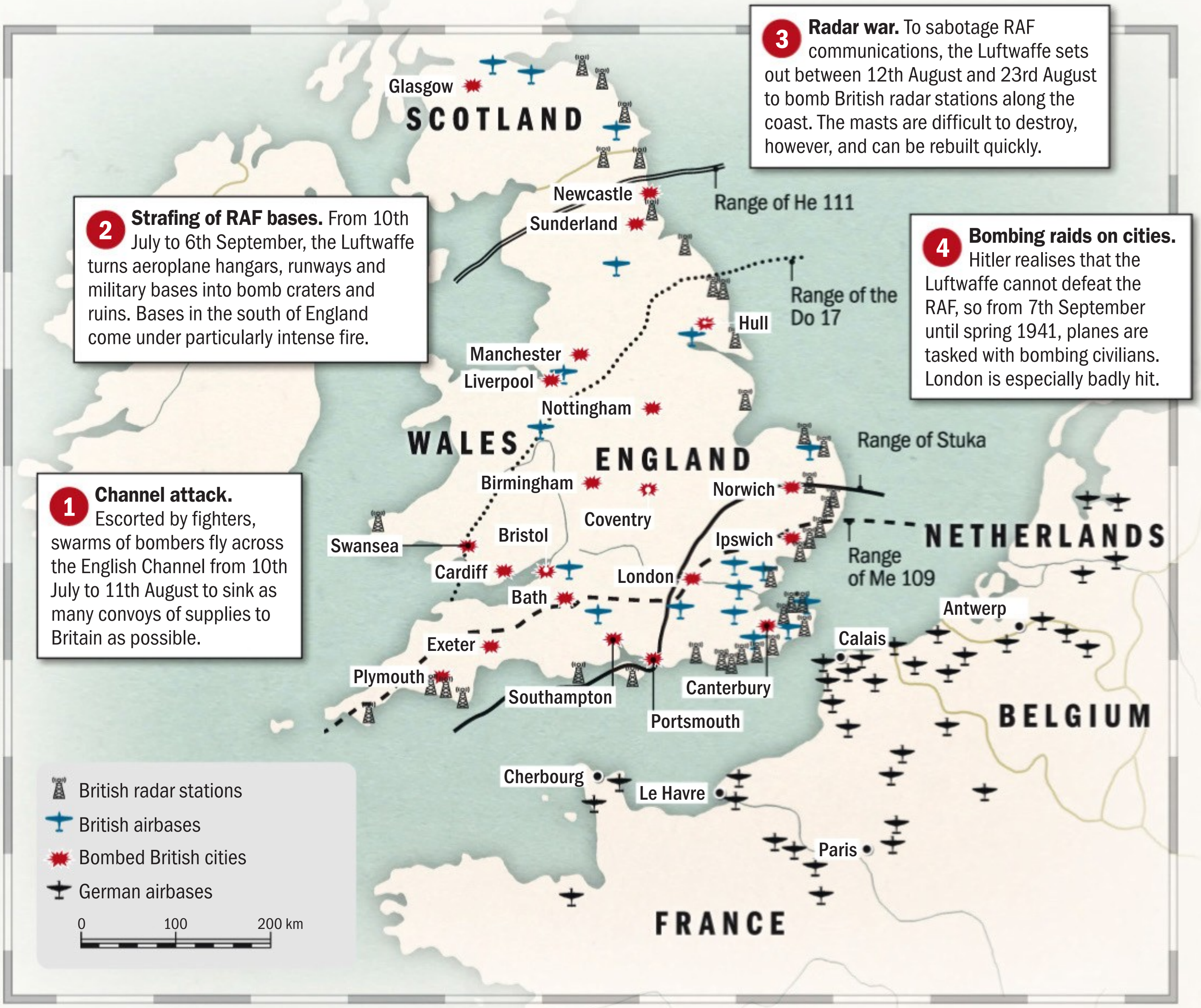
Germans' wavering strategy decided the battle

BRITAIN
English Channel
FRANCE

During the Battle of Britain, the Luftwaffe received constantly revised orders as Hermann Göring changed his strategy. In July's Channel campaign, the Luftwaffe was tasked with hitting the Channel and Thames convoys and RAF airbases, while in August it had to put all its effort into wiping out the RAF and the radar system. In September, seeing no sign of the promised British defeat, Hitler decided to drop bombs on British cities. The many shifts in strategy helped to ensure the Germans never gained the upper hand in the Battle of Britain. The last chance of victory was lost when the Germans started bombing civilians in urban areas just when the RAF was struggling with a lack of planes, exhausted pilots and most of its airbases in ruins.

The German change of tactics gave the British the chance to repair their damaged airbases and runways, and allowed the pilots some much-needed rest. The price for the British was admittedly high. Thousands of civilians were killed in the bombardment known as the Blitz, but in return, the Royal Air Force could muster the strength for a decisive battle and repel the invasion threat.

Waves of fighters *swept over the south coast of Britain for months.*



③ **Radar war.** To sabotage RAF communications, the Luftwaffe sets out between 12th August and 23rd August to bomb British radar stations along the coast. The masts are difficult to destroy, however, and can be rebuilt quickly.

② **Strafing of RAF bases.** From 10th July to 6th September, the Luftwaffe turns aeroplane hangars, runways and military bases into bomb craters and ruins. Bases in the south of England come under particularly intense fire.

④ **Bombing raids on cities.** Hitler realises that the Luftwaffe cannot defeat the RAF, so from 7th September until spring 1941, planes are tasked with bombing civilians. London is especially badly hit.

① **Channel attack.** Escorted by fighters, swarms of bombers fly across the English Channel from 10th July to 11th August to sink as many convoys of supplies to Britain as possible.

Glasgow
SCOTLAND
Newcastle
Range of He 111
Sunderland
Range of the Do 17
Hull
Manchester
Liverpool
Nottingham
WALES
ENGLAND
Range of Stuka
Birmingham
Norwich
Coventry
Swansea
Bristol
Ipswich
NETHERLANDS
Range of Me 109
Cardiff
London
Bath
Antwerp
Exeter
Calais
Plymouth
Canterbury
Southampton
Portsmouth
BELGIUM
Cherbourg
Le Havre
Paris
FRANCE
British radar stations
British airbases
Bombed British cities
German airbases
0
100
200 km

Bombs fell *over British cities, but not all detonated. Here, a controlled explosion disposes of a German bomb.*

fighter pilots – one in six – died in the Battle of Britain. On the German side, the death toll reached 2,500. Other pilots were so badly injured that they never took off again but lay emaciated in hospital beds recovering, some beyond recognition. Doctors experimented with plastic surgery to repair the damage, but in some cases the task was impossible.

Pilot George Bennions had been shot down and hospitalised. Discouraged, he lay in bed with the feeling that half his life had just been snatched away and the other half was worthless, when an invitation to visit another hospitalised RAF comrade was brought to his room. Bennions accepted.

"As I opened the door in ward three I saw what I can only describe now as the most horrifying thing that I have ever seen in my life. That was this chap who had been badly burnt, really badly burnt. His hair was burnt off, his eyebrows were burnt off, his eyelids were burnt off, you could just see his staring eyes. His nose was burnt, there were just two holes in his face. His lips were badly burnt. And then when I looked down his hands were burnt. I looked at his feet. His feet were burnt. I got through the door on crutches with a bit of a struggle. This chap started propelling a wheelchair down the ward. Halfway down he picked up a chair with his teeth. That's when I noticed how badly his lips were burnt. He brought this chair down the ward, threw it alongside me and said, 'Have a seat old boy.' And I cried."

After the visit, Bennions felt a deep sense of gratitude that he was not so badly hurt after all.

Hitler ordered cities ruined

Despite exhaustion and long lists of dead pilots, British aircraft continued to take off from the remains of their airbases and attack the German air force.

Bob Foster didn't allow sentiment to get in the way of his mission. He was just shooting down planes. Planes that could have shot down a friend of his. A bomber who might have dropped bombs on his home town. He felt no remorse.

In Berlin, however, the frequent downing of German aircraft was not so easily accepted. And when RAF planes carried out a raid on Berlin on 25th August, Hitler was furious and decided to take the Battle of Britain to a new level. In revenge for the attack on Berlin, British cities and people were to be ▶

STRENGTH RATIO

By July 1940, the British had **around**

1,960

fighters and bombers available. They were outnumbered by the Germans, who at the time had just over

2,500

aircraft ready to attack Britain.

bombed to smithereens, so the morale of civilians would suffer, hopefully forcing the country's politicians to conclude a peace treaty. London, in particular, was to feel the full force of the Luftwaffe, and in September 1940, air raids on the capital began in what would become known as the London Blitz.

Four and a half kilometres above the Thames on a September day, 21-year-old pilot John Beard described the sight of a large German attack force looming in the cloudless sky, heading for the capital:

"It was a terrific sight and quite beautiful. First, they seemed just a cloud of light as the sun caught the glistening chromium parts of their engines, their windshields and the spin of airscrew discs. Then, as our squadron hurtled nearer, the details stood out. I could see the bright-yellow noses of Messerschmitt fighters sandwiching the bombers, and could even pick out some of the types. The sky seemed full of them, packed in layers thousands of feet deep. They came on steadily, wavering up and down along the horizon. Oh, golly [I thought]. Golly, golly!"

Suddenly he felt the tension in his body disappear and a strange calm spread through him. Without thinking, John Beard did as he was trained. He adjusted his machine gun until the red target of the reflex sight stood out clearly before his gaze. Through his headphones, Beard could hear his superior giving orders before his squadron dived and charged.

"My [engine] screamed as I went down in a steeply banked dive on to the tail of a forward line of Heinkels. I knew the air was full of aircraft flinging themselves about in all directions, but … behind my sight, I was conscious only of the Heinkel I had picked out. As the angle of my dive increased, the enemy machine loomed larger in the sight field, heaved toward the red dot, and then he was there! … When he was square across the sight, I pressed the button. There was a smooth trembling of my Hurricane as the eight-gun squirt shot out. I gave him a two-second burst and then another. Cordite fumes blew back into the cockpit, making an acrid mixture with the smell of hot oil and the air-compressors."

Pilot watched fire lick fuselage

When John Beard looked back at his prey, he noticed the inside of his bomber was glowing red. Flames ▸

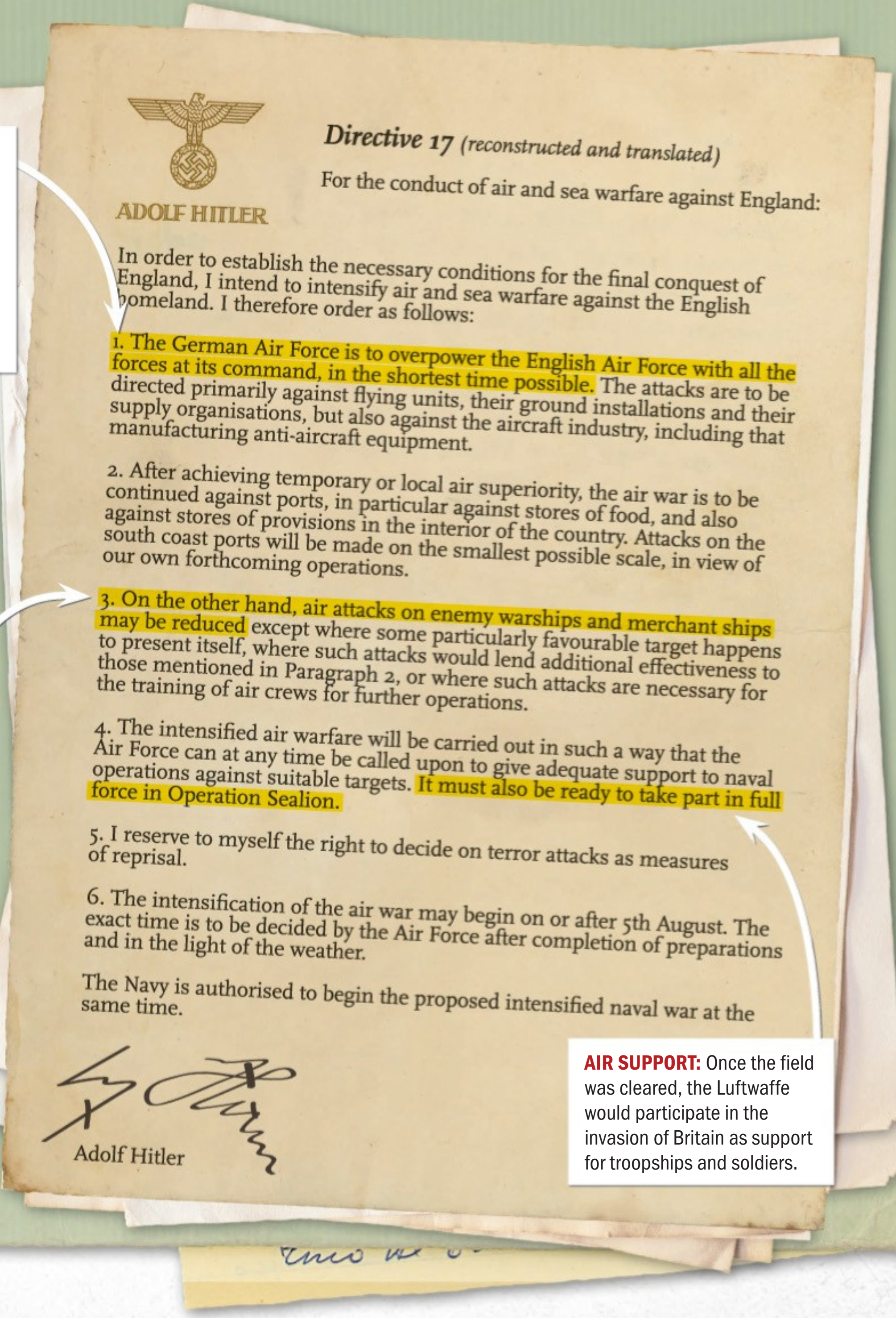
British pilots *could be sent off up to five times a day, and over time the exhaustion of months of fighting began to show.*

HITLER'S FÜHRER DIRECTIVE 17 | 1st August 1940

New strategy to break the RAF

Before the Germans could invade Britain, several preconditions had to be fulfilled. The Germans placed particular emphasis on the Royal Air Force, whose fleet of aircraft had to be eliminated.

In July 1940, Luftwaffe bombers flew over British convoys in the English Channel, posing a deadly threat, and several merchant ships had already been attacked. Hitler still hoped that Britain's new leader Winston Churchill would fall to his knees and make peace, but the British had no intention of surrendering. Therefore, the Germans also planned an invasion of Britain, and to pave the way for the coming landing operation, Hitler listed in Directive 17 the conditions he wanted to be met before he would send landing troops across the Channel. In the directive, Hitler placed particular emphasis on the Luftwaffe securing air supremacy, because without German superiority in the skies, the troops down below would be too exposed.



ADOLF HITLER

Directive 17 (reconstructed and translated)

For the conduct of air and sea warfare against England:

In order to establish the necessary conditions for the final conquest of England, I intend to intensify air and sea warfare against the English homeland. I therefore order as follows:

1. The German Air Force is to overpower the English Air Force with all the forces at its command, in the shortest time possible. The attacks are to be directed primarily against flying units, their ground installations and their supply organisations, but also against the aircraft industry, including that manufacturing anti-aircraft equipment.

2. After achieving temporary or local air superiority, the air war is to be continued against ports, in particular against stores of food, and also against stores of provisions in the interior of the country. Attacks on the south coast ports will be made on the smallest possible scale, in view of our own forthcoming operations.

3. On the other hand, air attacks on enemy warships and merchant ships may be reduced except where some particularly favourable target happens to present itself, where such attacks would lend additional effectiveness to those mentioned in Paragraph 2, or where such attacks are necessary for the training of air crews for further operations.

4. The intensified air warfare will be carried out in such a way that the Air Force can at any time be called upon to give adequate support to naval operations against suitable targets. It must also be ready to take part in full force in Operation Sealion.

5. I reserve to myself the right to decide on terror attacks as measures of reprisal.

6. The intensification of the air war may begin on or after 5th August. The exact time is to be decided by the Air Force after completion of preparations and in the light of the weather.

The Navy is authorised to begin the proposed intensified naval war at the same time.

Adolf Hitler

RAF TO BE DEFEATED: If the Germans were to take Britain in a blitzkrieg, RAF fighters could not stand in the way of Luftwaffe aircraft supporting the ground troops. Most important in the run-up to the invasion, therefore, was to wipe out the RAF – not just aircraft and airbases, but plane factories and the industry that made aircraft parts.

STRATEGY CHANGE: In July, the focus had been on attacking the supply convoys. Directive 17 marked a shift in strategy by turning all forces against the RAF. However, particularly strategically important ships could still be attacked.

AIR SUPPORT: Once the field was cleared, the Luftwaffe would participate in the invasion of Britain as support for troopships and soldiers.

MANCHESTER GUARDIAN

16th September 1940

Cheers for Fighters and AA Successes

German bombers and escorting fighters were sent crashing yesterday in fierce air fighting over the south-east and the London area during two daylight raids. Londoners saw them falling at Victoria, Kennington and Streatham.

In the first attack, which developed at noon, at least 50 planes were zooming in battle high over London. Thousands in the centre of the capital cheered wildly as they watched the Spitfires send a big German bomber hurtling to destruction. Roof-watchers reported that they saw fragments of one or two raiders, blown to pieces apparently by AA fire.

As the fight went on at least three Nazis were seen to bale out and descend in the inner London area. One who drifted down in a London suburb was watched by a large crowd. When soldiers had taken him away, men and women tore his parachute to pieces – for souvenirs.

Another Nazi airman who landed near a small police station had his arms outstretched and was shouting *"Kamerad, kamerad."* He could speak little English, but he repeatedly murmured to the police and soldiers who formed a cordon round him, "I am an officer." He had been wounded in the battle and was taken to hospital.

Crowds cheer

As one raider, aided by cloudbanks, wormed its way over Central London, a fierce AA barrage opened up, but ceased as the clouds drifted away. Then a flight of six Spitfires were seen. One attacked the Nazi plane, which, like a sitting bird, seemed incapable of attempting escape. The Spitfire poured a deadly lead stream into the raider and it spiralled down, smoke pouring from its tail. The Spitfire rolled victoriously and the crowds below cheered madly and danced with joy as the bomber fell. One eyewitness of the dogfights said: "I saw a Spitfire attack a formation of enemy bombers. The fighter fastened on to one of the enemy and fought a hot duel. Presently the German began to leave a trail of black smoke behind him. One of the crew baled out and then the bomber went into a steep dive and burst into flames. Suddenly it broke into a thousand pieces in mid-air."

About a dozen high-explosive bombs dropped in one south-western suburb, considerably damaging house and shop property, bursting gas mains and starting small fires, but there were no serious casualties. Some casualties, at least one of them fatal, were caused by half a dozen high-explosive bombs dropped in another part of the same district. Several shops, a public house, and some private houses were demolished. A bomb which exploded in another residential area made a number of houses uninhabitable and caused some fatal casualties.

The second attack

It took our fighters and guns just over an hour to clear the skies, and the "All clear" sounded at 12.56. But at 14.15 the sirens wailed again, and a few minutes later the heavy drone of the German bombers could again be heard in the London area.

Again our fighters roared up and ripped into the enemy formations, their guns blazing. One watcher said, "Two planes certainly came down and I saw one parachutist descending."

About 400 German planes are believed to have crossed the East Coast heading for London. At one point in south-east England, 36 German planes flew over in formations of six and were immediately engaged by AA guns.

The first two squadrons broke up. One of the planes dived to earth and two parachutes floated down after the crew had baled out. Two planes from another squadron, surrounded by bursting shells, were also seen to fall to the ground, evidently as the result of AA fire. A German bomber which dropped two bombs in a London district made a forced landing and burst into flames. The clouds were low at the time, and the presence of the machine was first indicated by two falling bombs. Shortly afterwards the bomber – a large black machine – appeared from the clouds, flew in a slow half-circle, and dived straight to the ground. A few seconds later it burst into flames. Immediately after another German aircraft dropped bombs in the same neighbourhood.

Just before the German bomber crashed AA guns had put up an intense barrage, but it was not known whether the machine fell to the anti-aircraft gunners or to Spitfires, which had been wheeling round.

British pilot bales out after a victory

One British sergeant pilot baled out over a London district and landed at the back of a house where a pressman has his home. He told the reporter, "I managed to get him before they got me."

The reporter introduced himself and shook hands. The airman exclaimed: "I am a pressman, too, in civil life. Tell my father I am all right. He is your correspondent at –" (naming a famous seaport city).

The airman telephoned to his home aerodrome, and when he emerged into the street a great cheer went up from the crowd, many of whom rushed forward to shake him by the hand.

The machine which the sergeant pilot is believed to have shot down was a bomber, which watchers saw falling to pieces in the air. The two wings were seen floating down separately. Seconds afterwards the fuselage followed the wings, descending surprisingly slowly in the same direction. The wreckage was strewn over an area of about 200 yards. The fuselage burst into flames, but there was no explosion. During the fight a number of parachutes were seen descending some distance away.

were licking the fuselage and the bomber fell spinning on its axis, smoke following the machine's death course. Before Beard's Hurricane ran out of fuel, the pilot managed to shoot down another German Messerschmitt. Three more kills and he would earn the title of flying ace, and there was plenty of opportunity to do, because German bombers were taking off in droves from bases in northern France.

Tonnes of bombs fell on bases, industrial sites and cities, with London particularly hard hit. Hitler's strategy was to prove a mistake, however, for while German planes were bombing cities, British pilots enjoyed a brief respite at the airbases, giving them just enough strength to carry on the fight and time to train new pilots. The Battle of Britain culminated on 15th September, known as Battle of Britain Day, when Göring ordered over 1,000 Luftwaffe planes into the air, heading for Manchester, Liverpool, Birkenhead, Portland, Southampton and London.

Churchill followed battle from bunker

That day, Churchill had planned a visit with his wife to an HQ in Uxbridge that coordinated radar stations' alerts with RAF activity, and therefore had a front-row seat in the bunker for watching the battle. As one of four headquarters, the bunker crew was responsible for assessing which and how many aircraft the RAF would send out, from which bases the aircraft would take off and what course they would set.

The Churchills watched from the bunker's plotting room. There, the operators indicated the movements of both their own and enemy squadrons on the table's huge map, with wooden pieces representing the aircraft. At Churchill's side was Air Vice Marshal Keith Park, who directed the battle. In front of them, the pieces shifted position on the table as new reports came in from radar stations.

The first serious report reached the bunker at 10.45, when radar stations signalled that a German air force of over three square kilometres was closing in over Calais, where the English Channel is at its narrowest. The force consisted of about 100 Dornier bombers escorted by twice as many Messerschmitts. Park had no doubt that the swarm was heading for London, and ordered all Number 11 Group aircraft to stand by for action, while calling in assistance from Groups 10 and 12. Park had been experiencing the power of the German air force for a month and a half, and had no hope that his fighters could act as an impenetrable barrier. On the other hand, he had also discovered the German fighters' Achilles heel: their fuel tanks did not last very long in the air over London.

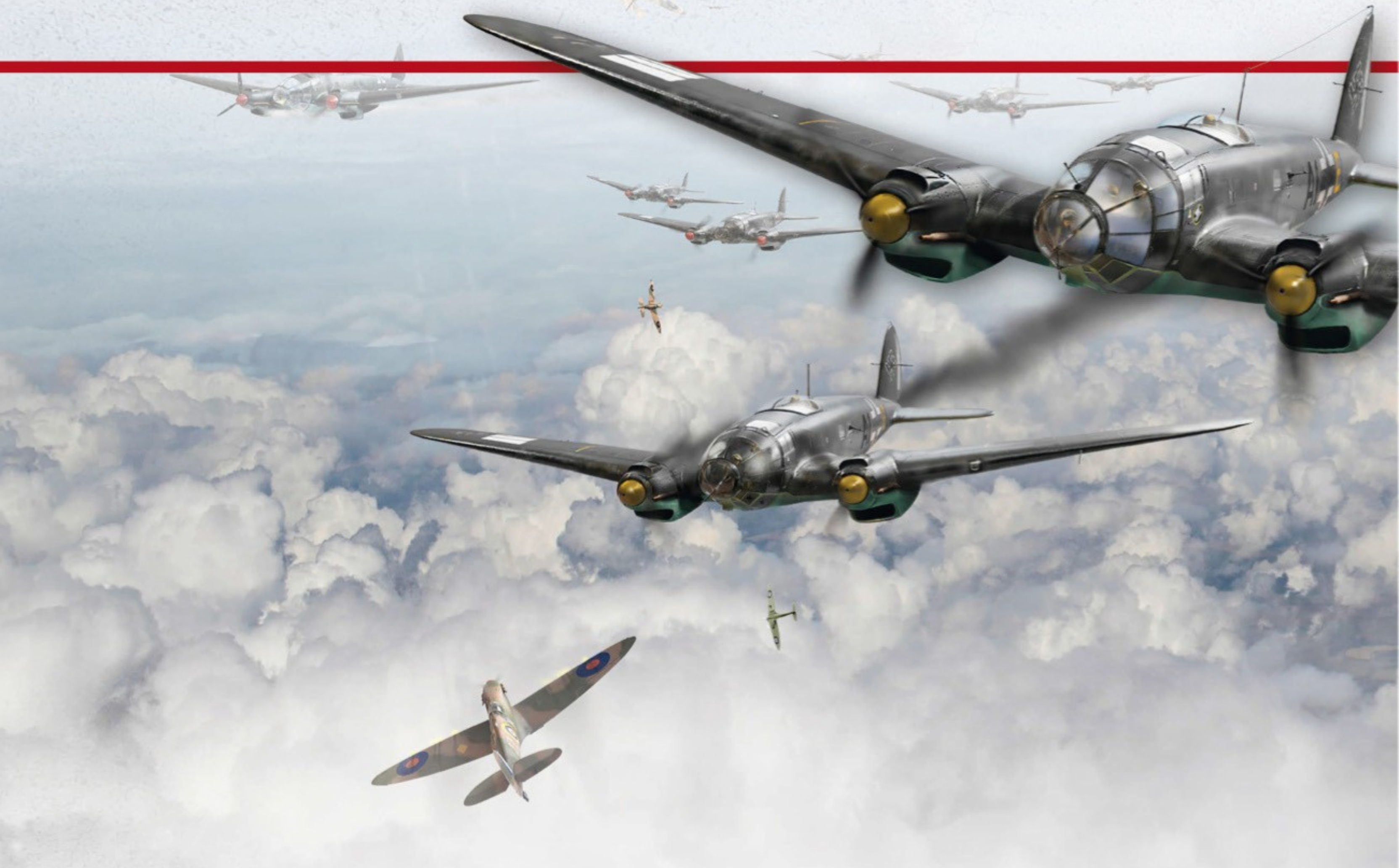
The Royal Air Force's tactic, therefore, was for the Spitfire and Hurricane pilots to hinder the fighters for as long as possible in the airspace over southern England, so that the German fighter pilots would be forced to turn back for lack of fuel before they even reached London. Without their escort, the bombers would subsequently be easier prey.

250 fighters attacked at once

Spitfires clashed with the strike force over Maidstone, about halfway between the Kent coast and central London. Shots flew around the hordes of fighters as RAF command continued to call for assistance. Before long, the Germans were under attack from 250 fighters from as many as 23 squadrons.

Bob Foster was part of 605 Squadron, whose attacks were against the first formation around Maidstone. The squadron performed formidably, shooting down and destroying several German aircraft. During the mission, squadron leader Mike Cooper-Slipper had a memorable incident. His plane was shot out of control and crashed into a German bomber. Without its left wing, the aircraft spiralled ▸

German intelligence *underestimated the British aircraft industry, and Hitler mistakenly believed he could make the RAF run out of planes.*



The battle was decided *on Battle of Britain Day, 15th September, when the RAF finally fended off the German threat of invasion.*

down and Cooper-Slipper jumped out, but landed unhurt – apart from minor scrapes – near Marden. Later in the day, he returned to Croydon with two German life jackets and a rubber dinghy given to him by Maidstone police. Pilot David Cox of 19 Squadron was also ordered into action to dispose of the escort:

"We were taking the Messerschmitts, 109s, on. After the first pass or two I saw a Dornier below me. I made an attack but he got into cloud. I had plenty of ammunition, so I flew south a little bit and to my right I saw six single-engine aircraft, which I thought were Hurricanes ... But it was the angle I was looking at: they turned towards me and I turned towards them and found they were six 109s. Which ... was slightly embarrassing! We were on about the same level, but four of the 109s dived away – I saw nothing more of them.

"Of the other two, one climbed up behind me and one climbed up above me in front and the one behind attacked and I turned very violently, and he just carried straight on and I didn't see him again. But the one who'd been above me, I turned and he was coming at right angles and I fired with a 90-degree deflection, saw strikes on his aircraft and he then went down through some broken cloud and crashed near Crowborough."

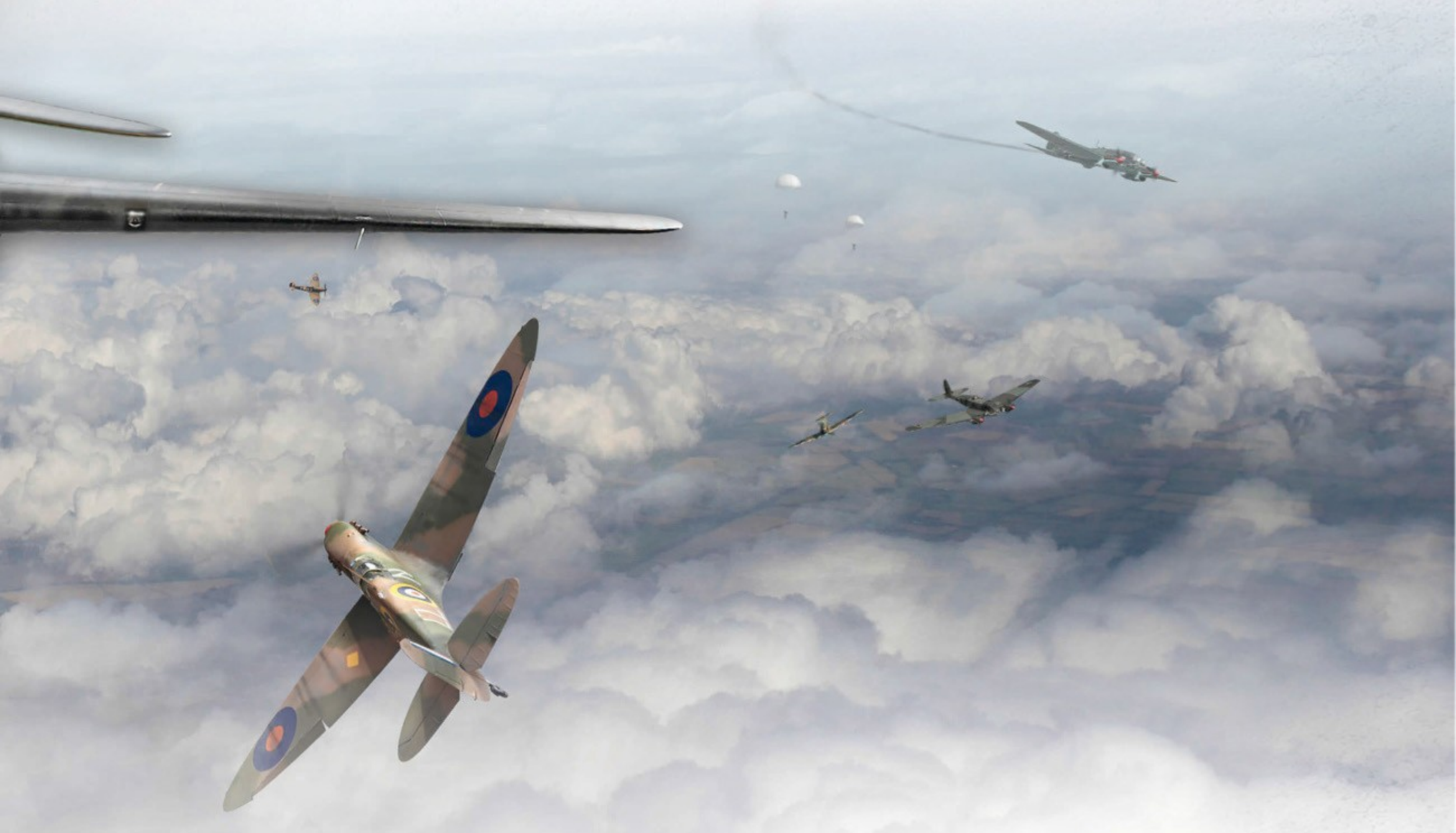
Park's tactics seemed to be working. The Luftwaffe fighters had to expend large amounts of fuel on the dogfights, and as the needle on the fuel gauge approached a critical point, more and more Messerschmitts had to turn around and fly back to northern France. Their escape left the bombers unprotected, so when German Dornier aircraft, which had just begun to drop their bombs south of London, were attacked by a group of fighters, the pilots were forced to flee. With a swarm of Spitfires and Hurricanes on their tail, they flew back to France.

Bomber crashed on golf course

On the ground, British civilians watched in suspense as the decisive battle took place in the skies above. At 11.00, young Douglas Cooper was with his father, who had just finished digging a shelter in their garden in Barnehurst, Kent. He had bent sheets of corrugated iron over the hole, which was just over a metre deep, but had not finished securing the opening when the siren sounded. Douglas could already hear the low hum of German bombers.

"Our anti-aircraft guns had been firing at them as soon as they were in sight. Then the Spitfires and Hurricanes started to attack, you cannot imagine the noise with the aircraft chasing one another, machine guns and anti-aircraft shells all going off at the same time," Douglas recalled.

From the garden, Douglas could see an area of allotments where locals grew vegetables for their



families, and behind them stretched a golf course. Now all the neighbours, as well as the boy and his parents, had their faces turned to the sky, where the aerial battle was unfolding before their eyes. With shouts and cheers, the residents tried to drown out the roar of the gunfire and the engine noise.

"All of a sudden there was a German bomber flying right towards us. Just skimming the tops of the golf course trees. It was a Dornier, one of their biggest. It was so low we could see the pilot flying it and we could see the gunner in the nose of the bomber pointing his machine gun at us. My dad pushed me and my mum down into the trench of the shelter, it had no ends but was better than nothing. At this point Dad leapt on to the top of the shelter waving his arms at the bomber and shouting 'Turn back, turn back!' Why they never shot at him or any of us we will never know.

"The bomber droned over just skimming the roof of our house and tried to gain height and then turned right round and came back. He looked as if he was going to land on the golf course. Suddenly a Spitfire was on his tail blasting away with his guns shooting right into the back and top of the bomber which then took a nosedive and crashed into the golf course. There was a tremendous thud, a massive explosion and the ground shook, and there was a big red flash and we saw the tail of the plane go up in the air. We could hear the machine gun ammunition exploding within the burning bomber."

At first, the spectators cheered at the scene, but then everybody stiffened as three unexploded bombs came rolling across the golf course where it sloped down to the allotments. The fence around the golf course stopped two of the bombs, but the third continued to roll down towards the rows of cabbages and carrots. As if in slow motion, Douglas Cooper watched the huge bomb trundle into the garden shed closest to the gathered people. The wooden walls collapsed over the explosive.

"[E]veryone stood petrified and then dived to the ground expecting the bomb to explode. But thank God nothing happened and after a few minutes everyone started pulling themselves together and getting up. The bomber was still burning and you could still hear the ammunition cooking off. Some men were running across the golf course towards it, I don't know if they had hopes of saving the Germans and taking them prisoner, but we heard afterwards that there were no survivors. There were further explosions and some of the men were injured, one of our neighbours had a piece of an ear blown off."

The Spitfire pilot who had shot down the German bomber performed a victory roll in the ▸

British pilots always carried a small fire extinguisher in the cockpit.

To Operate
Pyrene

The canister was filled with carbon tetrachloride, which puts out fires but is also poisonous.

> I have never seen a better bit of flying than those Nazi pilots put up – they got into formation like a well-drilled team. ■ **Alexander McKee, British eyewitness**

sky above the onloookers before flying back to his airbase.

Southampton factory to be bombed

The stream of German aircraft into Britain continued, and at around 14.00 on Battle of Britain Day, Göring launched the second massive attack of the day, with 475 aircraft from bases in northern France. At Number 11 Group's command centre, Keith Park ordered the RAF squadrons to follow the same strategy that been successful earlier: to deplete the Luftwaffe fighters' fuel before they reached London. At the plotting room in Uxbridge, Churchill asked Park what reserves he had up his sleeve. *"There are none,"* Park replied. All the planes were in the air.

At 17.40, a third, smaller strike force of German aircraft took off, and ten minutes later was hovering over the Isle of Wight, heading for its target: a Spitfire factory in the Southampton suburb of Woolston. The town's anti-aircraft guns filled the air with projectiles as Luftwaffe aircraft approached, and in the skies over Southampton, RAF fighters now appeared and attacked the enemy aircraft. In a café, 22-year-old Alexander McKee and his friend Alfred were finishing a cup of tea when the attack began:

"I went outside on hearing enemy planes. I counted them aloud. Ten. They dived straight down on Southampton, without any preliminaries, through the barrage of gunfire, one after the other. Alfred saw a bomb released, then handed the glasses to me. The aircraft had twin rudders, and might have been Dorniers or Jaguars. The dives were fast but shallow, and they pulled out of them at 2,000 feet … Soldiers passed inane remarks about 'nothing could live in that barrage', although the Germans were very obviously living in it and bombing in it, too.

"The barrage was quite good, but none of the Huns were brought down. Quickly and efficiently the Germans re-formed and disappeared into a cloud. I have never seen a better bit of flying than

Despite smiles in honour of the photographer, *the casualties were high. One in six British pilots lost their lives in the Battle of Britain.*

those Nazi pilots put up – they got into formation like a well-drilled team, in the teeth of the guns."

Daylight attacks too dangerous

The bombers did not hit their target, the Spitfire factory, but managed to damage the town's shipyard and gas and water supplies. Nine Southampton residents were killed and ten seriously injured. As darkness fell, both the Luftwaffe and the RAF were busy boasting of the day's achievements. A telegram from the British Air Ministry said RAF pilots had successfully shot down nearly 200 German aircraft.

"Here is the midnight news and this is Alvar Lidell reading it. Up to 10 o'clock, 175 German aircraft had been destroyed in today's raids over this country. Today was the most costly for the German air force for nearly a month. In daylight raids, between 350 and 400 aircraft were launched in two attacks against London and south-east England. About half of them were shot down," the BBC presenter's voice rang out into the airwaves in the darkness of the night.

He could not know that the real figures were over 1,000 German attack aircraft, but 'only' around 60 shot down. Across the Channel, the Nazis celebrated the shooting down of 79 British planes, when in reality it was only 29. After the battle of 15th September, Hermann Göring claimed that the RAF could now muster only 177 aircraft, which was also far from the truth, and he insisted he would bring the RAF to its knees. But Hitler had lost faith that the Luftwaffe could pave the way for an invasion of Britain, and a few later, he postponed his plan indefinitely.

The "few" Churchill had thanked, consisting of 3,000 RAF pilots, had shown the Germans that Britain's air force would keep fighting. Instead of defeating the RAF, the Luftwaffe now set its sights on terror-bombing Britain in the dead of night.

Although pilot Bob Foster had seen comrades fall in battle, he never doubted that he would make it through the Battle of Britain. He was an optimist. He feared getting shot down – and he almost was – but he believed he would survive. He never thought it would be the last time he flew, even though it easily could have been.

The Battle of Britain officially ended on 31st October 1940 – 46 days after the decisive Battle of Britain Day. Although German bombers continued to attack London for another seven months, the Battle of Britain was Hitler's first military defeat and the victory gave the Allies new hope.

The British were ready to fight back. ■

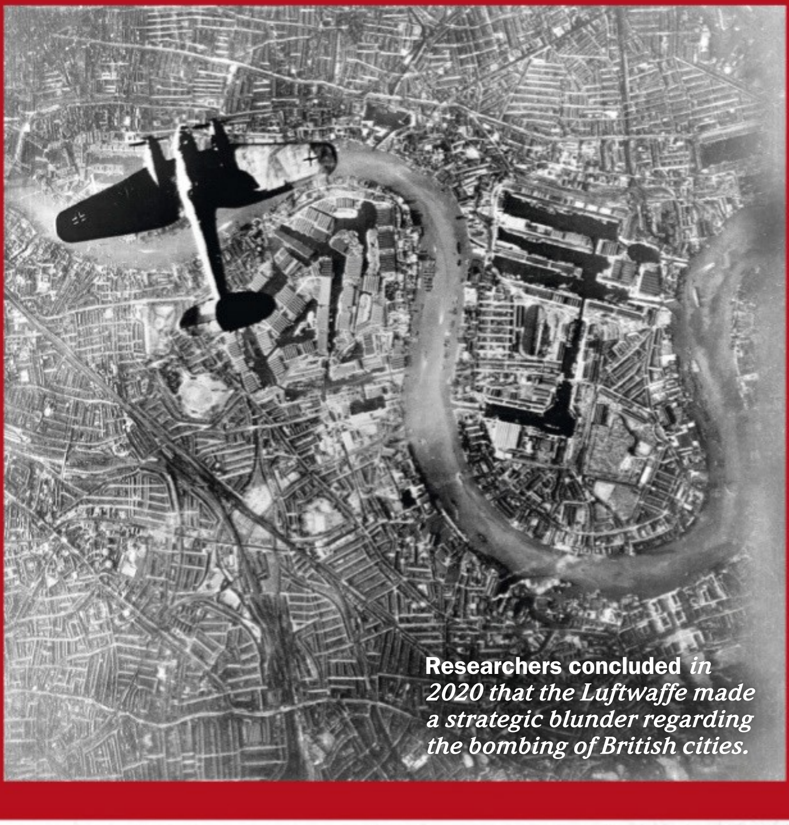
HOW COULD...

...Germany have won?

In 2020, mathematical models revealed that the Germans could have won the Battle of Britain if they had stuck to the strategy of taking out RAF bases and aircraft.

If Hermann Göring had attacked earlier and stuck to destroying Royal Air Force bases and aircraft rather than bombing convoys, radar stations and civilians in cities, the Germans could have won the Battle of Britain. At least, that's the conclusion of a group of mathematicians from the University of York, who in 2020 used a computer simulation to calculate the course of the battle if various factors in the war had been different.

The mathematical models estimate that in July 1940 the Germans had about a 50 percent chance of victory. But if the Germans had attacked three weeks earlier and used all their forces to destroy the RAF's strength, they would have had a 90 percent probability of winning. The Germans – according to the mathematicians – made two strategic blunders in particular. First, the Luftwaffe waited too long and thus attacked too late. If the Germans had begun their bombing raids as early as 18th June, after Winston Churchill's speech known as 'Their Finest Hour', the RAF would not have had time to devise and prepare defences, train enough pilots and, most importantly, ramp up aircraft production. Second, the Luftwaffe scattered its bombs across a wide range of targets. The Germans had the initial advantage in numbers of fighters, and after a month and a half of attacks on RAF bases, by the end of August, the British air force was close to collapse at the very point when the Luftwaffe turned its sights on British cities.



Researchers concluded *in 2020 that the Luftwaffe made a strategic blunder regarding the bombing of British cities.*

"The attack came on a beautiful Sunday"

By Amanda Edelstein

Rae Helen Bark saw the flash over London and watched as German pilots navigated along the Thames, trying to reach the centre of the capital. Failing in their mission, the pilots instead dropped their bombs on their return journey, hitting the town of Erith, where Rae Bark lived.

You were only six when war broke out – do you remember anything special about 1st September 1939?

I remember the day very clearly. I was visiting my aunt and uncle who lived in Belvedere, and my cousin and I were going over to a nearby wood to play. At a playground not far away, we saw a barrage balloon. As we were entering the wood, we saw the balloon float up, then sirens went off and we decided to go home.

As the adults sat worrying about what was going to happen, they realised that I'd better be sent home to my mum and dad in Erith. But everything had come to a standstill, including the buses. One of my cousins had a friend who owned a motorcycle. I got on the back of it and he tried to drive me home. But every road was blocked. Eventually, I got home and found my mother inside with the neighbour. She was very relieved to see me.

You lived relatively peacefully in Erith until 15th September 1940. That's when the Germans launched a huge daylight attack on London. Can you take us back to that day?

The attack came on a beautiful Sunday. My father was off because he worked nights. Suddenly we could hear a lot of noise. It was the Luftwaffe flying up the Thames to hit London. But I think it was a bit cloudy and not all the bombs hit London. On the way back, the planes tried to empty their holds to lighten themselves, so they could make the trip back to occupied France. We could hear the noise and naturally considered heading for the shelter, but the planes rarely bombed our area. When we came out of the house, we could see a German Dornier, which had caught fire, just above our house. The plane then crashed. My father said it would probably land on the golf course right behind us. So, my father, I and several neighbours hurried there.

When we arrived, we could see smoke coming from the plane. The Hurricane that had shot down the Dornier had flown away. We walked closer and closer to the burning plane and were climbing over a small wall when the plane suddenly exploded. My father was hit on his right side by metal. In fact, he almost lost his right arm and lost a large part of his right ear. I was only slightly bruised by shrapnel, as I fell on the 'safe' side of the wall during the explosion – unlike my father, who fell on the side closest to the plane. I noticed that my leg was bleeding, but ignored it to some extent. An air raid warden came up to me and said I'd better go home. So I ran home to my mother, and my father went to hospital.

One of the crew of the Dornier that was shot down was buried in the corner of St Paulinus

RAE HELEN BARK (1933-)

Born on 16th August 1933, she was six years old when war broke out. In 1940, she lived in Erith in south-east London and experienced first-hand the German bombing raids during the Blitz, including seeing a German pilot crash on the local golf course. Rae has volunteered at the Battle of Britain Memorial – the museum honouring the British pilots killed defending the country.

> Often the attacks came while we were washing up in the evening. Then we put little enamel washing-up bowls on our heads. ■ Rae Helen Bark.

One of the Luftwaffe's Heinkel bombers *is carried away after crashing near London. The RAF used the planes for spare parts.*

Cemetery in Crayford. When I walked from my house to a friend's, or to Sunday school or church, I walked past where the German crewman was buried. Occasionally, we went in and laid flowers on his grave. He was there, all by himself, in the corner. I didn't tell my parents, but it never occurred to me or my friends that we were doing something we shouldn't. I think his body was sent back to Germany after the war. Anyway, a few years ago, I walked by and there was no grave in that corner any more.

After your experience on 15th September 1940, were you more frightened when the siren sounded?

No. We weren't too bothered. You knew what to do. One time we were in Dartford to get money from the government to visit my father and the siren went off. The buses stopped running, so we decided to walk instead, because we didn't think we could get hit. An air raid warden then came out and told us we should go to the public shelter underground.

How many times during the eight months of bombing did you experience it up close?

Not too many times. After all, the bombers mainly attacked closer to the centre of London, where they simply followed the Thames. Some bombs fell around us, but it didn't affect us that much. It was just a lot of noise. Often the attacks came while we were washing up in the evening. Then we put little enamel washing-up bowls on our heads and went to the shelter in the back garden.

One night we saw a firebomb break through the roof of our neighbour's house and land in their bed. Luckily, we were all in the shelter. The bomb set fire to their belongings and when the fire brigade finally turned up, we were in the process of carrying all their possessions and furniture out of the house. Anything we could salvage was put in the back garden. However, the fire brigade aimed their hose wrongly and the jet of water shot right over the house and hit us in the garden. All of us standing back there, and all the furniture, got soaked. We weren't very happy. But we were all still very lucky that we had been in the shelter and not inside the house.

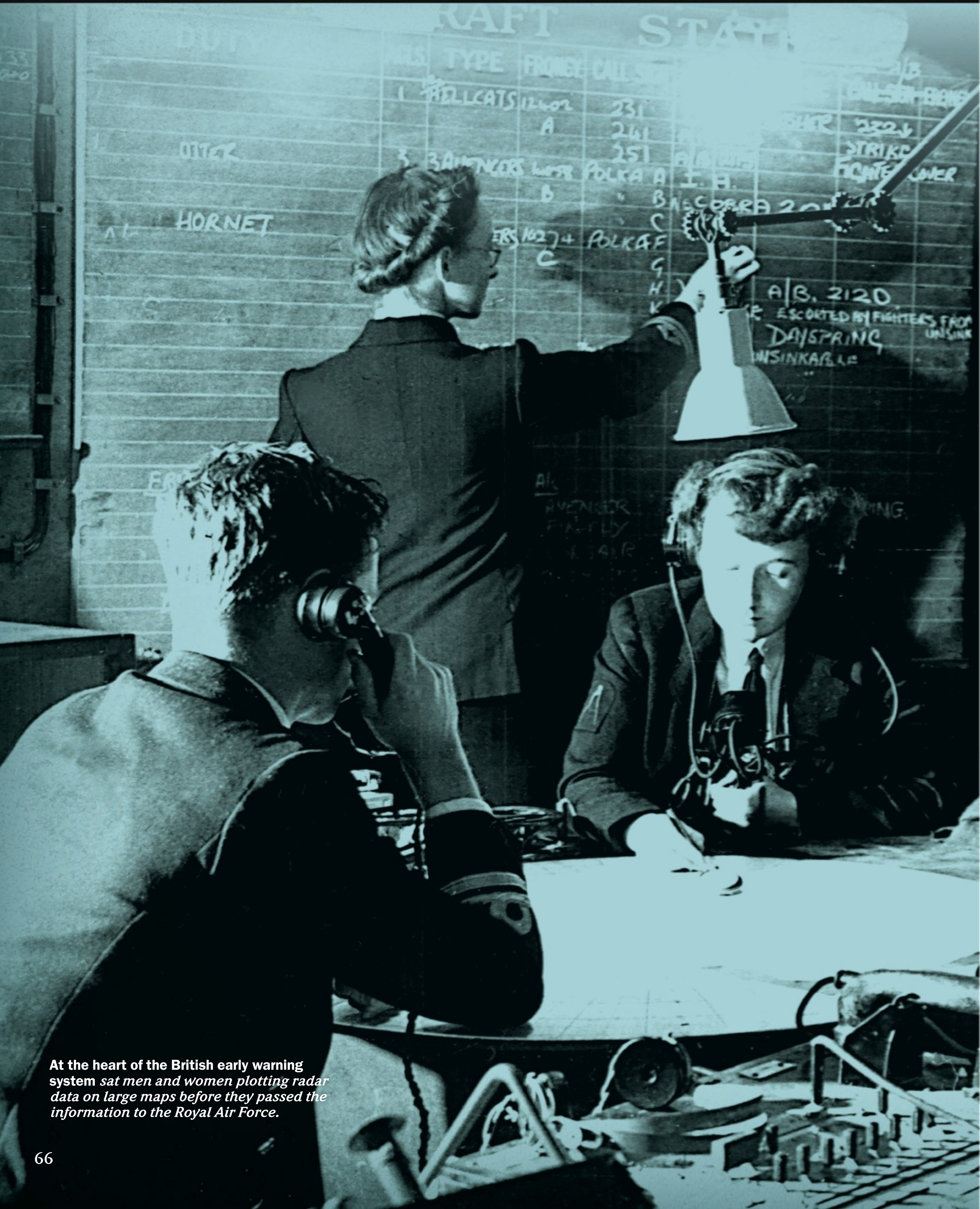
Did your parents ever consider sending you to safety in the countryside, like many other British children as part of the big national evacuation programmes?

They did, and I was away for six weeks when the Blitz was at its worst. I was sent off by train with one suitcase to Torrington in the south-west of England. Then we were rounded up and lined up, and a lady came out and 'claimed' us. I stayed with a widow who had two daughters. I had a wonderful time, including going to school in the open air. My mother was very anxious, though, so eventually my father came to get me.

What was it like growing up in England during World War II?

Apart from my father going into the army, life just went on. However, I think because I was an only child and my father was only home during the day, as he worked nights, I took on a lot of the responsibility. My mother wasn't very good at making friends and she couldn't ride a bike, for example, so I was the one who went for ration stamps every week on my bike. I also kept rabbits, so we had some meat to eat at Christmas. But I was still a child. We behaved like ordinary children, even then.

My mother and I often went on picnics and walks during the day. My playground was the golf course where the plane crashed. We weren't really allowed to play there, but all the local kids did. However, you were always aware that there was a war going on and if the sirens sounded, you knew exactly what to do. I guess we were very lucky. ■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STRIKE
FIGHTER COVER
A/B. 2120
ESCORTED BY FIGHTERS FROM UNSINKABLE
DAYSPRING
UNSINKABLE
A/C
AVENGER
FIREFLY

At the heart of the British early warning system *sat men and women plotting radar data on large maps before they passed the information to the Royal Air Force.*

> Radar at its worst is most valuable to my fighter group, and at its best, it is quite invaluable and a great boon.
>
> Keith Park, British air vice-marshal.

RADAR WON THE WAR

Radar won the war

In the 1930s, a British engineer discovered that flying aircraft interfered with radio signals. That knowledge was to prove decisive when he was approached by the British Air Ministry and asked to develop a defence against enemy planes. A few years later, radar masts were set up on cliffs from Dover to Wales.

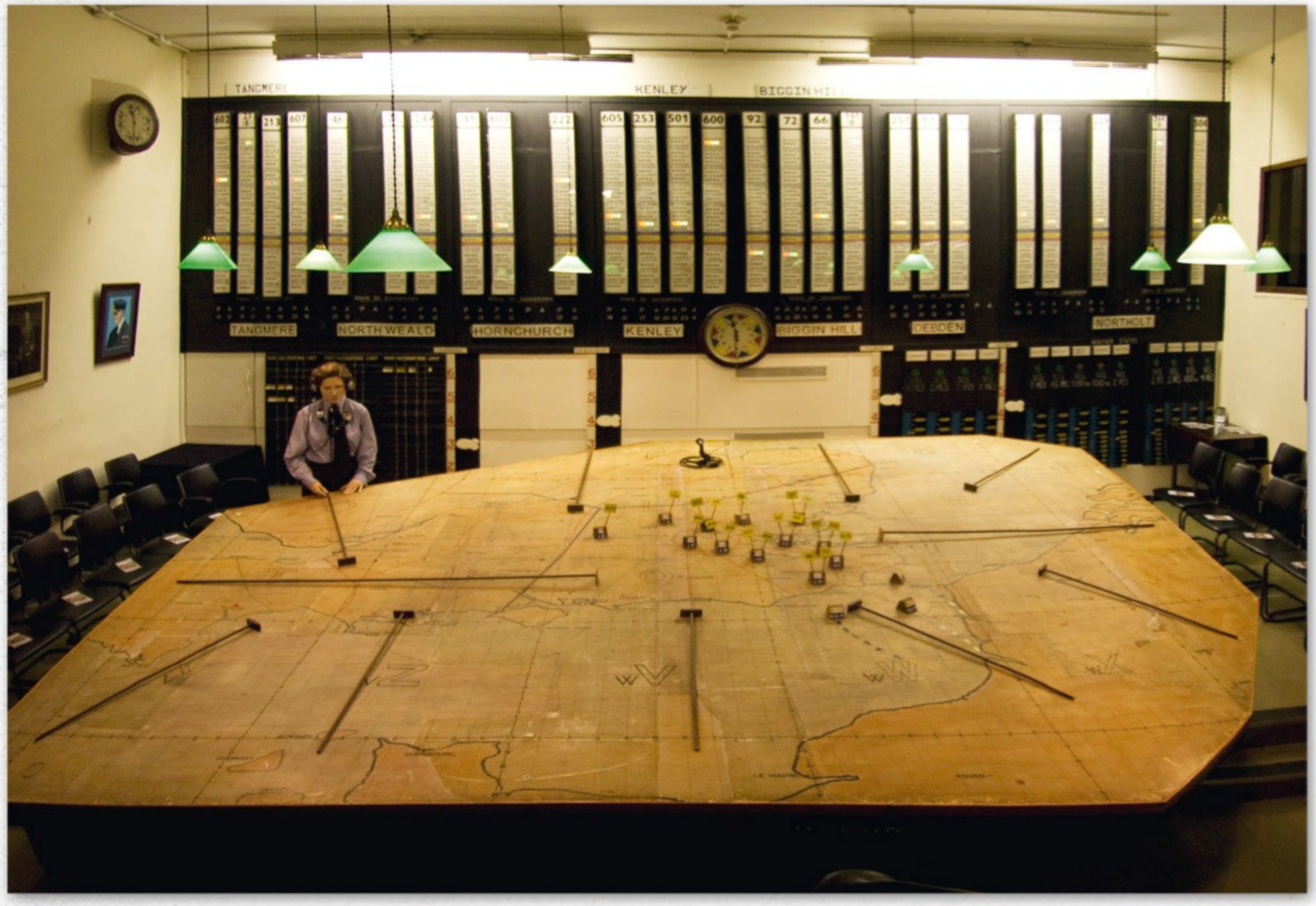
By Mette Iversen

At Pevensey radar station, one summer's day in 1940, plotter Jean Semple was standing by her RF5 screen when blips began to appear on the display, probably German Heinkel or Dornier aircraft. The young woman turned to her superior and suggested he take over the job now things were hotting up, but he replied: *"It's your operation, you do it."*

The swarm of blips was so dense that Semple had difficulty counting them and keeping track of the number: 189, 190… She counted almost 200 planes. When Semple and her superiors reported the staggering number to the Royal Air Force's filter room, the nerve centre of the RAF's Chain Home communications system, the officers cautiously asked whether there might be migrating birds or something else in the air. The answer was no; 200 German aircraft were heading for the British coast.

From the filter room, the information flowed down to headquarters and within ten minutes to the pilots, who jumped into their Spitfires and Hurricanes to meet the enemy in the air before German bombs could rain down on Britain. The British radar system was now to prove its worth and safeguard against the horrors the Brits had experienced during World War I. Back then, German Zeppelins had soared in over the coast to drop their cargo of bombs and set the country alight. Since WWI, the British Army had improved its defences with anti-aircraft guns, but their shells could not reach as high as the latest bombers. From the

An overall view *was created on plotting boards, where small wooden pieces showed the location of Allied and enemy planes.*



Death fell from the sky *in World War I, when German Zeppelins were a particular problem. Radar would ensure that Britain would not be an easy bombing target again.*

coast of northern France, enemy planes needed just 20 minutes to reach England and drop their loads.

In the British Air Ministry, politicians and experts considered a solution in which a force of fighters would be permanently airborne, ready to attack. But that would require a prohibitively large number of fighters, not to mention pilots. To find a viable solution, the ministry set up the Committee for the Scientific Survey of Air Defence (CSSAD) in 1934. The group's task was to secure Britain against air attack.

Countries sought protection

The British weren't the only ones seeking a means of air defence. All the major powers involved in World War I – from Britain and Germany to the United States and the Soviet Union – were working in the 1930s to develop technologies to detect and destroy enemy aircraft. In laboratories around the world, scientists were fascinated by electromagnetic radiation. One of the engineers who made a crucial breakthrough was Scotsman Robert Watson-Watt.

Watson-Watt was born in 1892 in Brechin, north of Edinburgh. Even as a boy, he was more attracted to engineering and science than his father's carpentry. Young Robert proved a bright lad at school and was awarded a scholarship to study engineering at University College, Dundee. As a newly qualified engineer, his professor, William Peddie, offered him an assistantship in 1912, and under Peddie's wing, Watson-Watt ventured into the world of radio waves and their untold technological possibilities.

Radio waves led him to a job at the Met Office, where Watson-Watt worked to invent technology to track and predict thunderstorms. The system to detect lightning and thunder would help pilots steer clear of storms, but it was there that the seeds of radar technology were sown, because the radio engineer noticed a peculiar phenomenon: aircraft seemed to interfere with the lightning's electrical signals.

Watson-Watt was head of the Radio Research Station when he was approached by his colleague Harry Wimperis, head of the Air Ministry's scientific division, on 18th January 1935. He was worried and asked Watson-Watt to meet him in his office.

"I've asked you to come and see me, not in my official capacity nor in yours, but because you are a friend, a personal friend, for whose discretion and judgement I have considerable respect. We are not to talk officially, but I wish you to tell me what you think about the possibility of a ray of damaging radiation which might be used in defence against air attack," Wimperis said. It was rumoured that scientists in Germany's new Nazi regime had developed a death ray – a weapon that, using electromagnetic radiation, would be able to cook pilots in their planes like a roast in an oven. In the same month, Radio Singapore had announced that Japan, too, now possessed the formula for death rays, which the announcer said could wipe out an entire US city. Meanwhile, the British Air Ministry had offered a prize of £1,000 to anyone who could invent a death ray that could kill a sheep at 100 yards (around 91 metres).

"I really don't think the physics are at all promising; unless we have an absolutely startling break-through in physics, in new knowledge, I would think that it is no bet at all. But I'll go back to my desk and do some arithmetic," promised Watson-Watt.

In the laboratory, Watson-Watt handed the task to his assistant, Arnold Wilkins, who had to work out whether electromagnetic radiation could raise the temperature of 75 litres of water by two degrees from a distance of ten kilometres. It didn't take long before the two engineers concluded that death rays were just a pipe dream. The electromagnetic force that the technology of the time was capable of generating could at most give a pilot a bit of a headache and as a weapon had no chance of success. During the experiments, however, Wilkins had noticed another ▸

ROBERT WATSON-WATT (1892-1973)
The engineer's contribution to the British war effort was so important that he was knighted in 1942. Watson-Watt's knowledge was sought after, and the Americans sent for the British engineer shortly after the attack on Pearl Harbor in 1941. There, Watson-Watt acted as an adviser as US air defences were built up.

Radar's Achilles heel *was that it had difficulty detecting aircraft at low altitudes. German planes therefore had to fly as close to sea level as possible.*

potential use of electromagnetic waves. He pointed out that because aircraft interfered with shortwave radio signals, it might be possible to use radio waves to detect planes.

"Meanwhile attention is being turned to the still difficult but less unpromising problem of radio-detection as opposed to radio-destruction, and numerical considerations on the method of detection by reflected radio waves will be submitted when required," his report noted.

A month after the meeting, in February 1935, the ministry received a confidential letter containing Watson-Watt's and his assistant's concept for the development of radar. The technology basically consisted of a radio transmitter that sent radio waves out into the air and simultaneously activated a receiver. The time taken for the radio waves to reach a target that returned them to the receiver was 10.74 microseconds per mile (just over 1.6 kilometres). In other words, the waves travelled at well over 100,000 kilometres per hour, and at that speed, an operator could quickly spot aircraft and calculate their distance. By simultaneously equipping RAF machines with IFF technology – Identification Friend or Foe – Watson-Watt would enable radar operators to distinguish between friendly and enemy aircraft.

Soon after the ministry received the letter, the RAF threw a hefty sum of money at the project, but the commander of the Royal Air Force, Hugh Dowding, was sceptical, saying:

"These scientific fellows can prove anything on paper, I would like to have a demonstration."

Two weeks after the presentation of the report 'The Detection of Aircraft by Radio Methods', Wilkins secretly drove into a field near the village of Weedon in central England in a cream-coloured van, then he and his driver began erecting antennas. The van was set up as a control room.

The following day, Watson-Watt, his nephew and a ministry official, Albert Rowe, arrived at the field, chosen because it was less than ten kilometres from the BBC's Daventry transmitter station. Wilkins had constructed and positioned his antennas so that they would receive the BBC signal if the radio waves were reflected from a flying object, such as a bomber.

Standing on the grass in the wintry landscape, the British official quickly realised that the engineers were on to something that could prove invaluable ▸

Radio waves created invisible screen around Britain

BRITAIN
English Channel
FRANCE

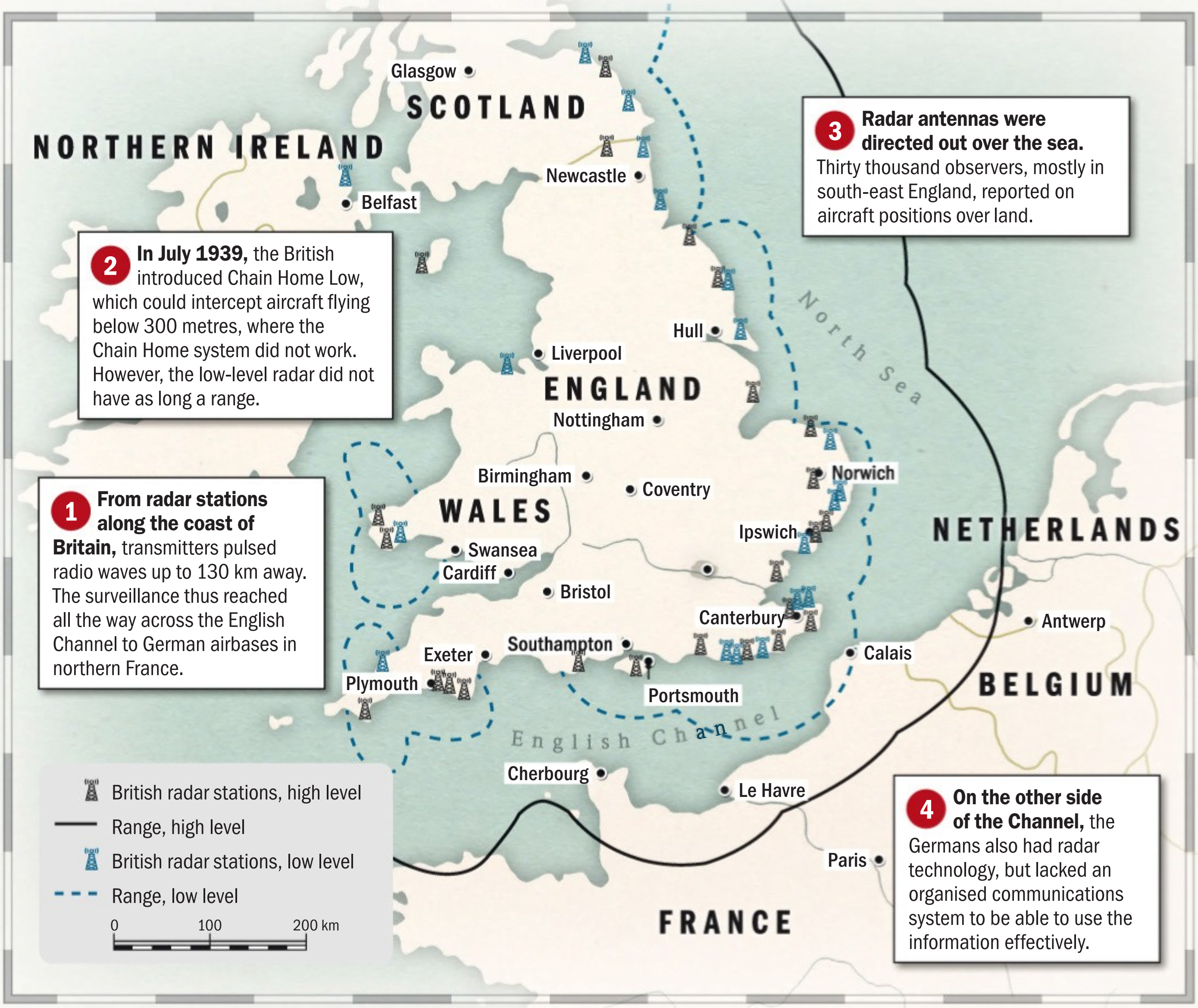
Britain's radar stations bombarded the entire coastal area from Wales in the west to Scotland in the north-east with radio waves that reflected off enemy aircraft.

To intercept low-flying aircraft, the British developed a system called Chain Home Low. During the war, radar surveillance was further extended, so that the radio beams reached as far as Northern Ireland and the Orkney Islands.

The radar system proved extremely effective during the Battle of Britain and helped the RAF hold off the numerically superior Luftwaffe. Unlike the RAF, the Luftwaffe had to rely on intelligence that was often out of date or inaccurate.

The radar system enabled the RAF to know with relative certainty where the Luftwaffe would attack and in what numbers. The RAF could therefore send just the right number of aircraft into the air, thus economising on pilots and planes. Some of the pressure on tired pilots was thus relieved, because they were only sent into the air when necessary. Radar also made it possible to wait until the very last moment to launch a counter-attack, which also eased the strain on pilots.

Where radar didn't work, *30,000 observers watched over the land.*


Glasgow
SCOTLAND
NORTHERN IRELAND
Newcastle
Belfast
Hull
North Sea
Liverpool
ENGLAND
Nottingham
Norwich
Birmingham
Coventry
WALES
Ipswich
NETHERLANDS
Swansea
Cardiff
Bristol
Canterbury
Antwerp
Calais
Exeter
Southampton
BELGIUM
Plymouth
Portsmouth
English Channel
Cherbourg
Le Havre
Paris
FRANCE
British radar stations, high level
Range, high level
British radar stations, low level
Range, low level
0
100
200 km

1 **From radar stations along the coast of Britain,** transmitters pulsed radio waves up to 130 km away. The surveillance thus reached all the way across the English Channel to German airbases in northern France.

2 **In July 1939,** the British introduced Chain Home Low, which could intercept aircraft flying below 300 metres, where the Chain Home system did not work. However, the low-level radar did not have as long a range.

3 **Radar antennas were directed out over the sea.** Thirty thousand observers, mostly in south-east England, reported on aircraft positions over land.

4 **On the other side of the Channel,** the Germans also had radar technology, but lacked an organised communications system to be able to use the information effectively.

Thousands of observers *watched for the enemy planes as they passed over the coastline and into England.*

> The mental stress and physical strain were intense under these conditions and when the personnel came off watch, tension was invariably high. ■ **Eileen Younghusband, British radar operator.**

for the nation's defence. When a British bomber took off at 09.45 and circled overhead in the frosty sky, the aircraft clearly reflected the radio signal back to the receiver.

"It's the finest demonstration I've ever witnessed," Rowe remarked.

"It was demonstrated beyond doubt that electromagnetic energy is reflected from the components of an aircraft's structure and that it can be detected. Whether aircraft can be accurately located remains to be shown. No one seeing the demonstration could fail to be hopeful of detecting the existence and approximate bearing of aircraft, approaching the coast," he wrote afterwards.

Chain of radar stations formed shield

Watson-Watt was now sent to work on the remote Orford Ness peninsula on the east coast of England. By June, he could track aircraft up to 26 kilometres away, and by 1935 his radar had a range of up to 97 kilometres. The bespectacled engineer took a pragmatic approach to the task:

"Give them the third best to go on with; the second best comes too late, the best never comes," he said.

In other words, he didn't want to promise he could produce the very best outcome – a superweapon, such as a death ray – but went for technology that was possible to achieve. At the same time, Watson-Watt proposed building a chain of transmitter and receiver stations along the entire south-east coast of England at 32-kilometre intervals as a complete shield against enemy aircraft.

Watson-Watt's earliest radar technology could determine the distance to an aircraft, but in order to send fighters into the air, the RAF also needed to know the enemy's altitude. The problem was explored by setting up transmitters and receivers on masts at different heights to hit aircraft with radio waves from various angles. Using trigonometry, engineers would be able to calculate an aircraft's height above ground level. The results were so promising that in 1936 the Air Ministry gave the go-ahead to build a series of test stations.

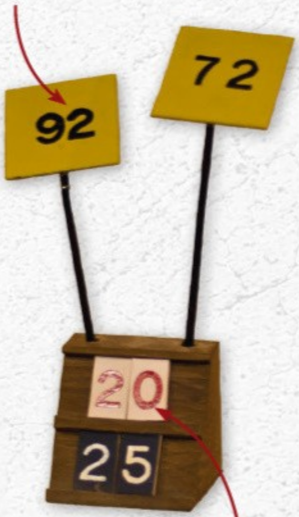
In September 1936, Watson-Watt and his colleagues invited top RAF and scientific figures to the test centre at Bawdsey on the east coast, near Ipswich. Among others, the head of the RAF, Hugh Dowding, had received an invitation. The demonstration was already months late, and Watson-Watt's interminable speech was a clear sign that he was nervous. In his eagerness, the radio engineer showed his guests to the control room before the last people had arrived, and when Hugh Dowding finally turned up, the air chief marshal tried in vain to find the rest of the group. Dowding first tried the lift shaft and the ladies' toilet before he found the office of an accountant, who sceptically asked who he was and what he wanted. The mood was already gloomy when the demonstration began.

The plan was for formations of planes to set course from the sea towards the coast, and the station's two 80-metre antennas to track them before they reached land. But as nine planes approached the coast at ten-minute intervals, the radar failed. The visitors could hear the hum of the engines with their own ears before the radar reacted. After a lunch that was served cold because of problems in the kitchen, Watson-Watt's mood reached rock bottom.

But the engineers toiled on. Most of the staff at Bawdsey station were young men with no families, and they worked from dawn until late at night, and at weekends. At mealtimes, they gathered in the panelled dining room, and the atmosphere was *"compared with that of an Oxford or Cambridge college, where some of the best technical discussions took place late at night in front of a roaring fire"*, as Watson-Watt described it.

Month by month, the engineers made the technology ever more accurate and reliable, and in 1937, the British were able for the first time to calculate accurately the height of an aircraft above the Earth's surface. The following year, in August 1938, five operational radar stations were completed. Meanwhile, the Royal Air Force developed the ▸

Wooden pieces like these were used on the plotting boards to keep track of aircraft numbers.



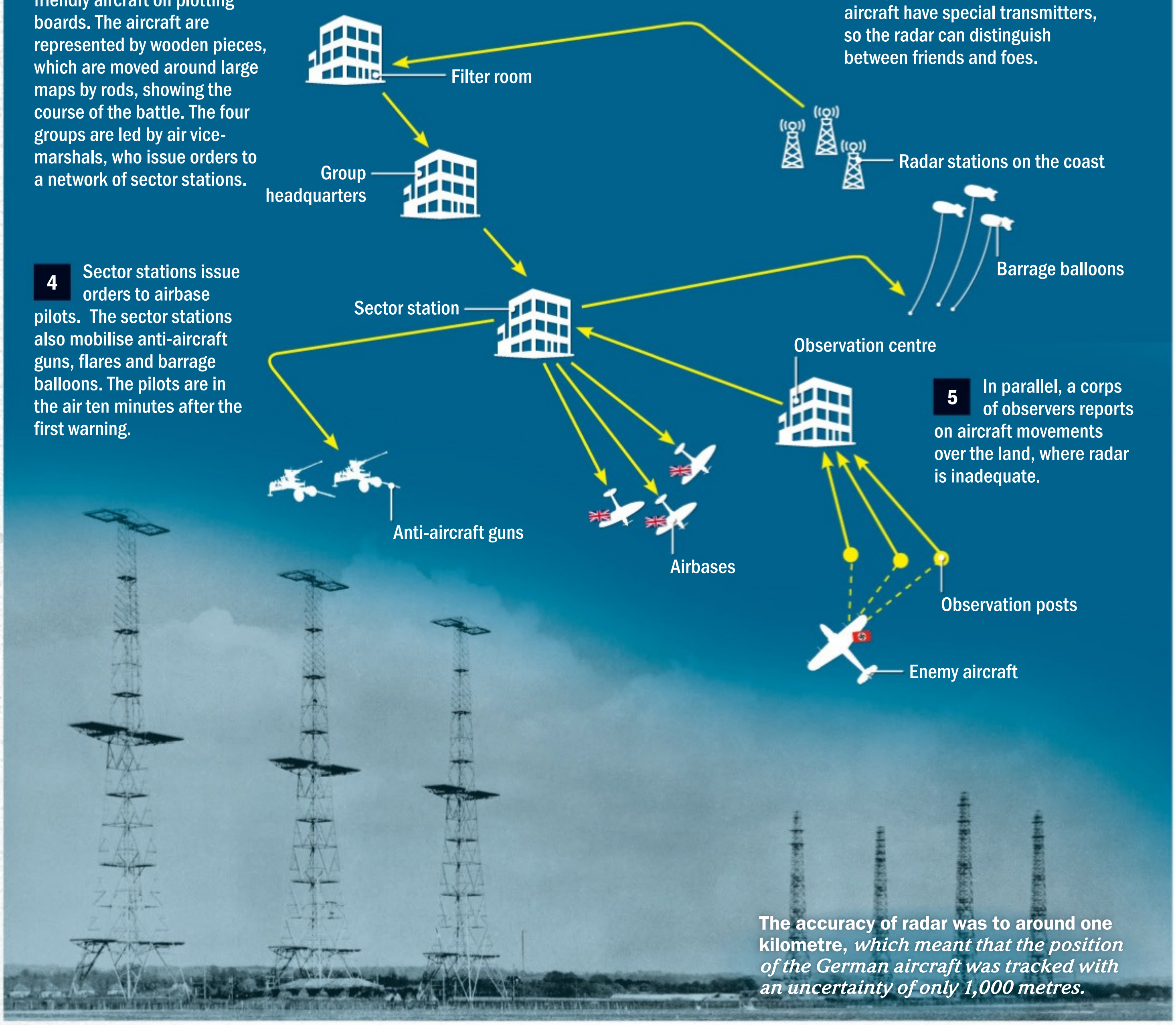
The numbers represent 25 enemy aircraft flying at 20,000 feet being attacked by Squadrons 92 and 72.

They didn't look like much, *but the 29 radar stations ready at the start of the war tipped the Battle for Britain in the Allies' favour.*

HOW...

...the warning system got pilots airborne within ten minutes

In record time, the Chain Home system turned vast amounts of information from radar stations into clear orders for the pilots to act upon.


Filter room
Radar stations on the coast
Group headquarters
Barrage balloons
Sector station
Observation centre
Anti-aircraft guns
Airbases
Observation posts
Enemy aircraft

1 Radar stations along the coast pick up signals from enemy aircraft. The RAF's own aircraft have special transmitters, so the radar can distinguish between friends and foes.

2 The filter room at Stanmore, near London, sorts the data from the radar stations so that air defence groups receive only the information that is relevant to them.

3 At headquarters, the relevant group plots information about enemy and friendly aircraft on plotting boards. The aircraft are represented by wooden pieces, which are moved around large maps by rods, showing the course of the battle. The four groups are led by air vice-marshals, who issue orders to a network of sector stations.

4 Sector stations issue orders to airbase pilots. The sector stations also mobilise anti-aircraft guns, flares and barrage balloons. The pilots are in the air ten minutes after the first warning.

5 In parallel, a corps of observers reports on aircraft movements over the land, where radar is inadequate.

The accuracy of radar was to around one kilometre, *which meant that the position of the German aircraft was tracked with an uncertainty of only 1,000 metres.*

> It is, I believe, agreed that, so far as concerns material, the First Battle of Britain was won by radar. ■ **Robert Watson-Watt, inventor of radar.**

Just ten minutes *after radar had done its job, British pilots were sitting in the cockpits of their fighters.*

Chain Home system, which would transform radar operators' information into orders, so pilots could get airborne quickly.

RAF commander Hugh Dowding was struggling. Sure, the operators' orders came through and the fighter pilots took off. But often it was too late or at the wrong altitude. He investigated and found that the problem was not technical, but a communications glitch. When the order went directly from the radar stations to the airbases, the pilots were often confused by too many or conflicting orders. Dowding therefore developed a line of communication through a filter room, four headquarters and a series of sector stations, which resulted in short, precise orders to the pilots.

Operators heard pilots burn

The early months of the war gave Watson-Watt and his colleagues the opportunity to fine-tune the radar system and lines of communication. Along the coast of Britain, from Wales in the west, down the south coast and up to the east coast of Scotland in the north, the masts of 29 radar stations now stood ready to pinpoint the position and direction of enemy aircraft up to 80 kilometres away. Although German planes had not yet attacked Britain, Luftwaffe aircraft approached the coast several times and appeared on displays in the control rooms.

When German planes launched an offensive on 10th July, primarily against supply convoys in the English Channel but also against British ports and airbases, the radar operators and the plotters, who were often female and recorded the aircraft's position, course and altitude, were kept busy.

From the radar station, information passed to the filter room, where the atmosphere was buzzing and sweat dripped from the heads of stressed staff.

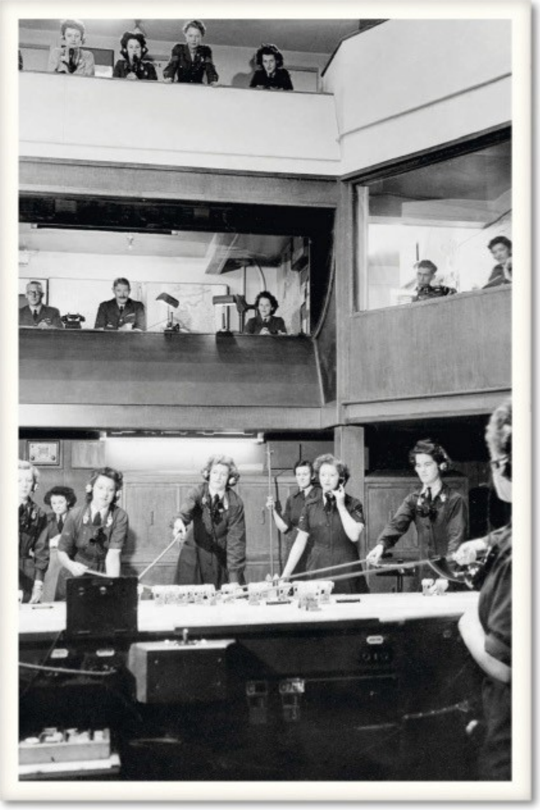
"For the displayed information to be of value to the operations room, it had to be as up to date as possible. This meant that in times of the greatest activity, a filterer officer must estimate and display salient information on up to 50 different tracks within a minute. The mental stress and physical strain were intense under these conditions and when the personnel came off watch, whether officer or airwoman, tension was invariably high. Throughout the meal supplied when coming off duty, the atmosphere was almost hysterical as they gradually unwound. Quite often, however▸

MEANWHILE

FRANCE:
The Vichy regime is set up and begins cooperating with Nazi Germany.

BRITAIN:
The British Union of Fascists party is banned.

KENYA:
Italian forces attack British troops in the country.

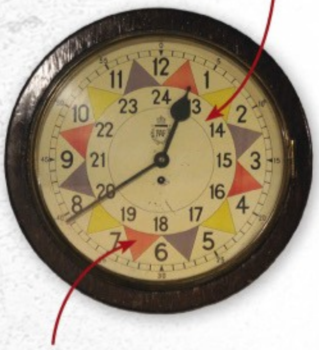


The victorious outcome *of the battle was not all down to men. More than 8,000 women played crucial roles in the Chain Home system.*

tired, sleep was impossible," recalled operator Eileen Younghusband.

From the filter room, information was passed to four headquarters for RAF Number 10, 11, 12 and 13 Groups. There, the data was visualised on large plotting boards with maps, so air vice-marshals Quintin Brand, Keith Park, Trafford Leigh-Mallory and Richard Saul could make the necessary strategic decisions and relay orders to a wider network of sector stations, which activated anti-aircraft guns, flares and, most importantly, pilots. Everything happened at lightning speed, and during attacks, the pieces on the plotting board changed position every few seconds. Lilly Little, a plotter who worked a shift at one of the sector stations during the Battle of Britain, explained that her job was to plot all the aircraft reported in the sector. If they were enemy planes, a black spot would appear on a yellow background. As soon as the spots materialised, the plotters went on alert. They received information through their headphones, then had to plot the course of the planes. The details were passed on to the pilots, who were looking for enemy aircraft.

From the sector stations, operators also communicated directly with the squadrons, which could not only be nerve-wracking but, according to RAF member Andy Forster, also made the operators witness the tragedies of air combat. Apparently, many of the female plotters dated pilots or knew them personally, so it was horrifying to hear the screams of a man burning up in the cockpit, unable to deploy his parachute, while the radio in the aircraft continued transmitting until the plane crashed to the ground.



The sector clock helped the RAF keep track of enemy aircraft movements.

Colour-coding enabled the RAF to read enemy speed.

Far from everything went smoothly in the Chain Home system. Operators had particular problems estimating the altitude and number of aircraft.

"The other day, a raid variously reported as three-plus, six-plus and finally nine-plus, turned out to be about 80 aircraft; so the fighter pilots reported after being shot up rather badly by vastly superior numbers. We dispatched 18 fighters to intercept this raid, because our controller sensed that it must be more than nine. This is not typical, but there was another instance almost as bad this afternoon, when two and a half squadrons were surprised to find that they were engaging between 45 and 50 enemy fighters and bombers in the Dover Straits. This sort of thing makes economical fighting very difficult," read a letter from Air Vice-Marshal Keith Park on 24th July.

Situated on cliffs, the radar antennas pointed out to sea, which was necessary but also created another major weakness in the system. The radar masts could not rotate, so they were only able to intercept aircraft as they approached the coast. A corps of volunteer observers then had to take over. Nor could the radio waves detect aircraft flying below 300 metres, so the British developed the Chain Home Low system to intercept low-flying planes.

Luftwaffe bombed radar stations

The effectiveness of radar soon became clear to the Germans, who a month into the Battle of Britain, on 12th August 1940, sent hordes of fighter planes into southern England in an operation designed to wipe out RAF airbases, command centres and radar stations. Shortly before 09.00, a special force of 16 Messerschmitts took off from northern France and a little later reached the coast of Britain, where they split into four groups to attack radar stations at Pevensey, Rye and Dover, among others. Thirty-two minutes later, eight bombs, each weighing half a tonne, exploded at Pevensey, and 15 minutes later, Rye and Dover were bombed. The worst attack was on the radar station at Ventnor, where 15 Stukas dropped their deadly cargo on the buildings, which immediately burst into flames.

Because the fire-fighters didn't have enough water, the flames could not be stopped before they had caused extensive damage. The German bombs hit a total of six radar masts at Dover and Ventnor. But as soon as the fires were out, the engineers stepped in and within just six hours, four of the masts had been repaired and were back in operation. Only at Ventnor did the operators have to wait a day to get the system back online. Göring was annoyed.

"It is doubtful whether there is any point in continuing attacks on radar sites, in view of the

fact that not one of those attacked so far has been put out of action," was the message of the Luftwaffe commander on 15th August. He decided to cease bombing the Chain Home stations and concentrate the attacks on British airbases instead. The Luftwaffe carried out a few bombing raids on radar stations, but to little effect. Thus, the radar network proved pivotal to the British winning the Battle of Britain. Robert Watson-Watt himself wrote to the Air Ministry on 21st December 1940:

"It is, I believe, agreed that, so far as concerns material, the First Battle of Britain was won by radar and the eight-gun fighter. Our old statement that radar would multiply by three, and perhaps by five, the value of our fighter force, has been justified."

Watson-Watt was notorious for his verbosity, but senior RAF figures concurred with the point he was making.

"Radar at its worst is most valuable to my fighter group, and at its best, it is quite invaluable and a great boon," concluded Keith Park, air vice-marshal of the RAF's Number 11 Group. ■

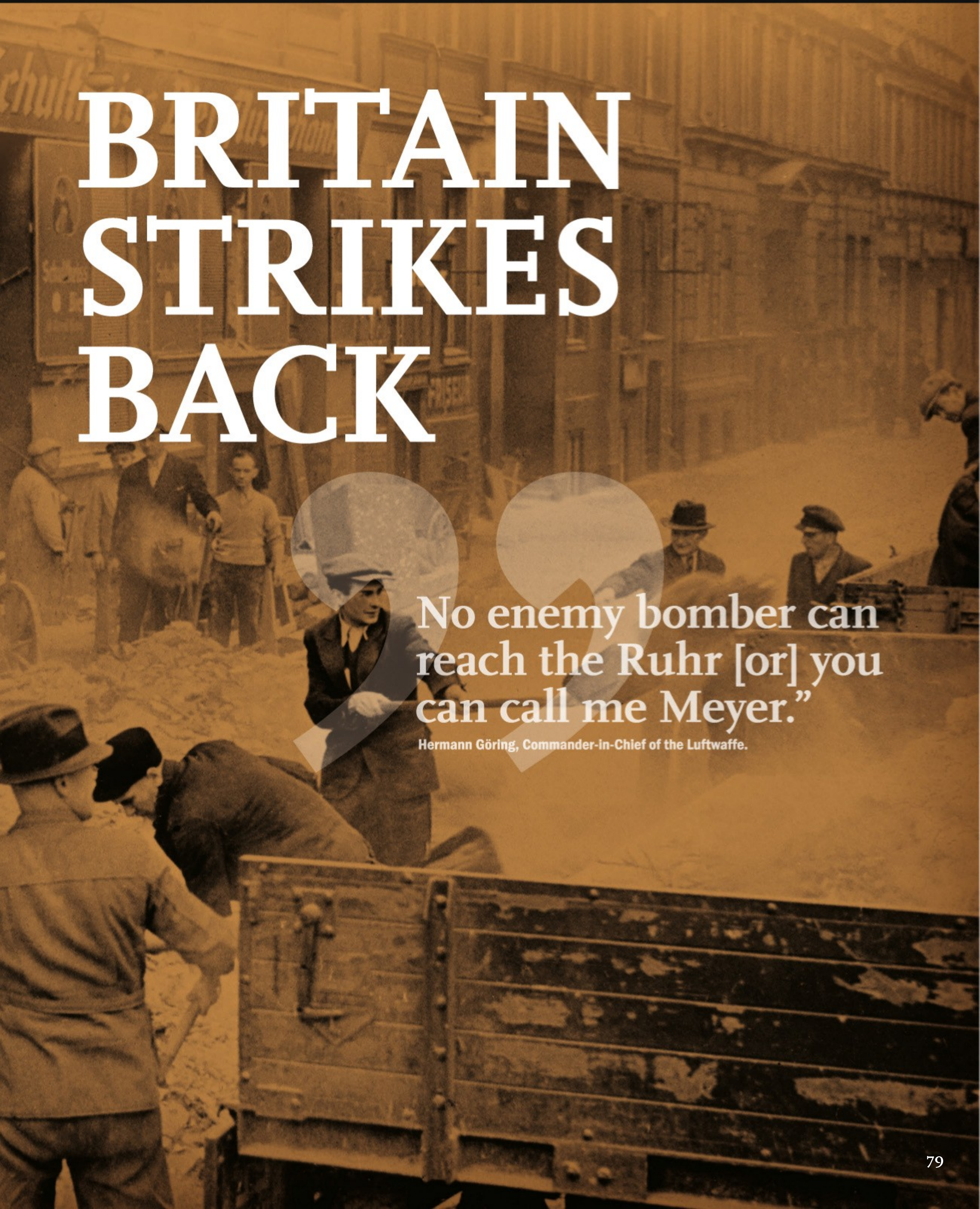
Germans lost the radar race

Germany held all the cards when it came to developing the new wonder technology. But Hitler saw radar as a weapon for wimps and stopped funding it.

Although electromagnetic radiation, the core of radar technology, was discovered by a German physicist in 1896, Germany still ended up lagging far behind the British in developing the new wonder weapon. Eight years later, German inventor Christian Hülsmeyer patented something resembling radar, but for the next 35 years, until the outbreak of war, German technological development came to a virtual standstill. True, during the attack on France, the German Army had radar that could spot aircraft and another system that could guide anti-aircraft guns, but both were poor quality and far inferior to British radar. The reason was Hitler's reluctance to fund the development of defensive tactics – the Führer's priority was offensive weapons. Competition between the German armed forces also cost dearly: when the German Navy developed accurate radar for use on ships and submarines shortly into the war, the leadership tried to keep the invention secret from the other armed forces.

The Luftwaffe lost 1,977 *aircraft in the Battle of Britain, or nearly 80 percent of its air fleet.*

During the summer and autumn of 1940, *Allied planes begin bombing Berlin. It was the first time that Germany felt the true horrors of war.*



BRITAIN STRIKES BACK

> No enemy bomber can reach the Ruhr [or] you can call me Meyer."

Hermann Göring, Commander-in-Chief of the Luftwaffe.

Britain strikes back

Herman Göring promised at the outbreak of war that not a single bomb would hit Berlin. But the Luftwaffe commander was forced to eat his words as Allied bombers roared over the German capital in the summer of 1940, dropping their deadly payloads. Against all odds, the Third Reich found itself under attack.

By Mette Iversen

Under a midnight blue starry sky, the French bomber *Jules Verne* approached Berlin on 7th June 1940. German soldiers were deep inside France, yet Allied pilots had been ordered to attack the Third Reich's capital. To the crew's surprise, the huge city was fully lit. Not a single street light was dimmed to hide the capital, and Captain Henri Daillière, in charge of the mission, ordered his pilot to navigate the plane as if it intended to land at Berlin's Tempelhof Airport. The pilot steered the plane towards the airport at low altitude before speeding on over the runway to head for the capital's Tegel district, which was being used as a military training area.

"Attention!" shouted Daillière, as he spotted his target: a Siemens factory just ahead. Moments later, the captain dropped part of his bomber's load over the factory, which supplied the army with electronics. The plane's mechanic opened the passenger door at the same time, and he and the bombardier pushed the cargo's 11-kg incendiary bombs out over the factory.

The low-altitude bombing was risky because the aircraft itself could be hit by blast waves from the explosions. But the crew aboard *Jules Verne* were lucky and, after emptying their cargo, were able to turn the plane south-west towards France.

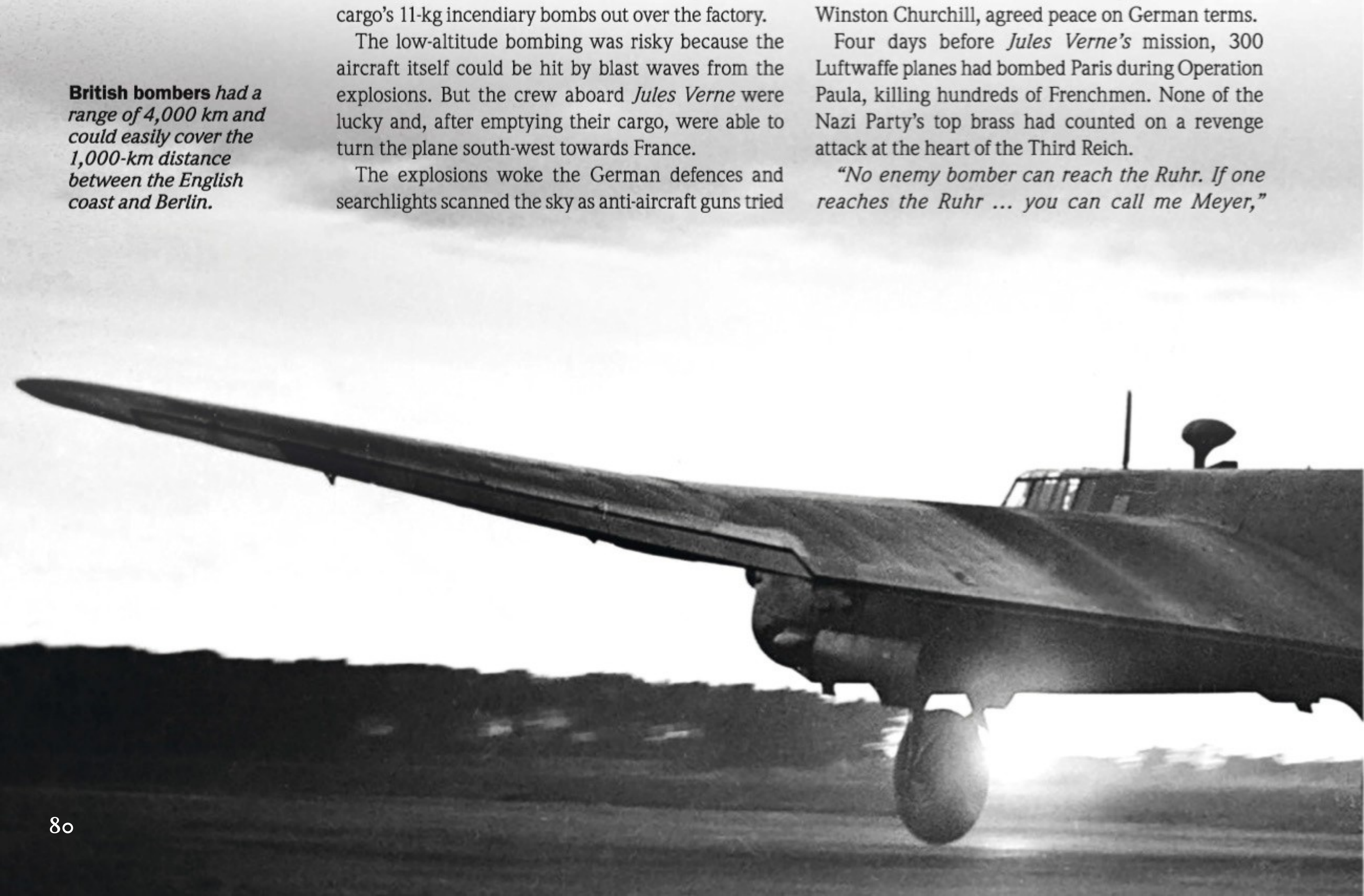
The explosions woke the German defences and searchlights scanned the sky as anti-aircraft guns tried to pick out the enemy aircraft, which had disappeared through a wall of projectiles. The French plane had once been a long-haul passenger and transport aircraft, so had plenty of fuel for the flight back home to Paris. For the first time, Allied aircraft had bombed Berlin, and as German troops marched on victoriously, civilians in the Nazi capital were left in shock.

The French bombed Berlin

The 7th June attack on the Siemens factory was the first in a series of Allied bombing missions over Berlin during the summer of 1940. The boots of British and French soldiers had barely dried after the evacuation from Dunkirk before *Jules Verne* bombed Berlin. During two weeks in May, German troops had seized all of northern France, and French defences were brought to their knees. As confident as ever, Hitler threatened to continue the Blitzkrieg across the Channel unless Britain's new prime minister, Winston Churchill, agreed peace on German terms.

Four days before *Jules Verne's* mission, 300 Luftwaffe planes had bombed Paris during Operation Paula, killing hundreds of Frenchmen. None of the Nazi Party's top brass had counted on a revenge attack at the heart of the Third Reich.

"No enemy bomber can reach the Ruhr. If one reaches the Ruhr ... you can call me Meyer,"



British bombers *had a range of 4,000 km and could easily cover the 1,000-km distance between the English coast and Berlin.*

Luftwaffe commander Hermann Göring had promised when World War II broke out. Now the Siemens factory was in flames.

To hide its embarrassment, the Nazi propaganda machine spread the news that the explosions were due to a military exercise. The regime's leaders knew, however, that the bombing had revealed just how vulnerable Berlin really was. When *Jules Verne* landed in Paris at 13.30 on 8th June, Daillière's superiors were delighted and shortly afterwards ordered the captain and his crew to carry out similar attacks on an aircraft factory in Rostock, followed by an industrial estate in Venice and an oil refinery near Livorno in Italy. The bombardment of Nazi Germany, later to be misleadingly called the second Battle of Britain, had begun. For the first time, the Allies would take the war directly to the heart of the Third Reich.

But almost as quickly as it had begun, the attacks on Berlin ground to halt after France was forced to surrender and Britain found itself with other, more pressing priorities.

One hundred Britons lost their lives

Throughout most of the summer, bombing raids were directed almost exclusively at Britain from the Luftwaffe's new airbases in occupied northern France. German bombers attacked supply convoys in the English Channel, RAF bases in southern England and British radar stations along the coast. The British concentrated their efforts on sending fighter pilots into the air to defend the country against Göring's squadrons, but also sent bombers east to destroy German airbases, oil installations, railways and strategic industries – especially aircraft factories. Until late August, civilians on either side of the front had not been direct targets. But on 24th August, late in the evening after a long, sunny day, German bombs fell on London's residential areas, killing more than 100 men, women and children in an attack that left the dead buried under piles of rubble.

Historians have since debated whether the bombs were dropped by mistake, but intentional or not, the explosions triggered a momentous decision. For the first time, Churchill ordered RAF bombers into the air in revenge. British Captain Leonard Cheshire remembered the feelings of anticipation:

"Berlin is in the air," he recalled. *"Only rumours at the moment but these sort of rumours usually turn out to be true… Everybody is the same; after all, Berlin is the reason for most of us joining Bomber Command."*

On 25th August, RAF commanders ordered huge attacks on a number of German targets. Although ▸

BREAKFAST
5/-
NIGHT PORTER
Winston Churchill

The extensive damage *to a London housing estate infuriated Churchill, who set out to retaliate against the German attack.*

FACTS

At the beginning of the war, the British lost bombers in large numbers because the pilots attacked during daylight. **The bombing raids on Germany** in 1940 were therefore carried out at night to avoid German air defences, which were too strong at that time.

The Berliners are stunned. They did not think it could happen. When the war began, Göring had assured them it couldn't. ■ **William Shirer, US correspondent.**

German airbases and ports in France were the primary goals, between 80 and 95 aircraft from three different squadrons were also deployed to Berlin for a night-time mission. Hitler was to feel Churchill's wrath right at the heart of Germany.

However, the weather proved unfavourable, and only around half of the bombers reached their targets.

"The weather was bad right from the start; as soon as we gained any height at all we ran into heavy cloud and during the journey we caught sight of only three small gaps in the cloud," said one pilot.

Yet 20 minutes after midnight, the crews of the British bombers saw Berlin lit up in the night, and Berliners heard the first sirens wailing over the capital.

The American journalist William Shirer, stationed in Berlin for the CBS radio station, wrote in his diary: *"I was at the* Rundfunk *(German state radio) writing my broadcast when the sirens sounded, and almost immediately the bark of the flak began. Oddly enough, a few minutes before, I had had an argument with the censor from the Propaganda Ministry as to whether it was possible to bomb Berlin. London had just been bombed. It was natural, I said, that the British should try to retaliate. He laughed. It was impossible, he said.*

"I found it hard to concentrate on my script. The gunfire near the Rundfunk was particularly heavy and the window of my room rattled each time a battery fired or a bomb exploded. To add to the confusion, the air-wardens, in their fire-fighting overalls, kept racing through the building ordering everyone to the shelters."

Pilots sneaked through the clouds

During the first British raid on Berlin, those pilots who succeeded in finding holes in the clouds over the capital launched their attacks decisively enough, but still found themselves dropping their bombs without a clear view of any targets.

"Suddenly we saw a small gap beginning to open in the clouds three or four miles away and we made for it," one pilot told of the night's bombing raid over Berlin. *"First of all, we thought we could see a main road junction. Then the hole in the clouds widened still more and we saw that we were right. Next, we caught sight of the reflection of the moon on a lake and these two points gave us our position. Working down the lake we got on to the target. More flak and searchlights than ever started and we could not keep a steady enough course to bomb the first time. So we did a preliminary canter and two or three minutes later we came back. We didn't dare to go very far away because, having had a bit of luck in finding the place, we were afraid of losing it once more in the clouds.*

"We went just far enough to shake off the guns and searchlights and then came back over the target. By this time the friendly gap had opened up just a bit more. Having dropped our bombs we turned away, dodging violently because the guns were getting warm again. We could see a large red fire burning and then the clouds finally closed over the scene."

Along with the bombs, the bombers dropped leaflets over the city with slogans like *"The war which Hitler has started will go on as long as Hitler."*

Despite large fuel tanks, the fuel gauge readings were approaching a critical point on board several

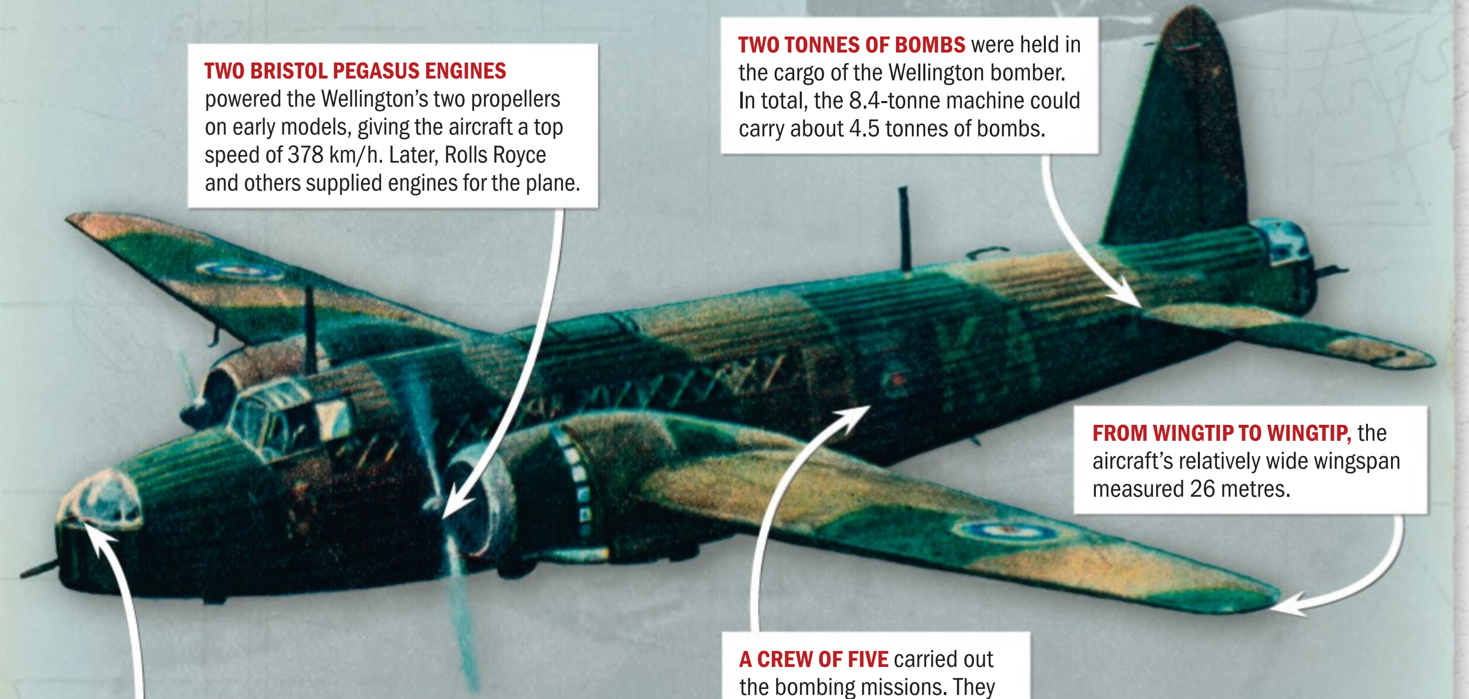
BRITAIN'S
AIR OFFENSIVE
R.A.F ATTACKS ON GERMANY
FOR DETAILS OF
RUHR AREA
BERLIN

Britons could follow *the progress of RAF bombing raids deep inside Germany via posters displayed across London.*

Plane could be packed with bombs

The Vickers Wellington was a stroke of engineering genius. It had a range of up to 4,000 km and was easy to produce. No fewer than 11,462 machines rolled out of factories during World War II.

Production of the Vickers Wellington bomber began in 1936 as the threat from Nazi Germany grew. Engineer Rex Pierson led the development of the aircraft's skeleton, coming up with an innovative design that was strong, flexible and lightweight. The Wellington became the RAF's most widely used bomber during the Battle of Britain and the rest of the war. Pierson's 8.4-tonne design gave the aircraft a range of over 4,000 km, allowing it to fly all the way from Britain to Berlin and back again on a single tank of fuel – just. Several pilots had to make emergency landings in the Channel or North Sea because the engines had swallowed the last drop of fuel.



TWO BRISTOL PEGASUS ENGINES powered the Wellington's two propellers on early models, giving the aircraft a top speed of 378 km/h. Later, Rolls Royce and others supplied engines for the plane.

TWO TONNES OF BOMBS were held in the cargo of the Wellington bomber. In total, the 8.4-tonne machine could carry about 4.5 tonnes of bombs.

FROM WINGTIP TO WINGTIP, the aircraft's relatively wide wingspan measured 26 metres.

A CREW OF FIVE carried out the bombing missions. They included an engineer, bombardier and gunner.

THE AIRCRAFT'S ARMAMENT included two 7.7-mm Browning machine guns.

of the British bombers returning to England. On the Berlin run, the planes had been downwind and had flown faster than planned, but now they faced a headwind. By the time the pilots caught sight of the English coast, the majority had spent more than eight hours in the air on the same tank of fuel, and several reported hearing their planes consume the last drops before having to make an emergency landing on the North Sea. The crew put the plane's dinghy in the water and then hoped that local fishermen or the Royal Navy would find them before the Germans.

Berlin's guns failed

Darkness still hung over Berlin when sirens sounded at 03.23 to call off the bombing. Radio reporter William Shirer described the Germans' reaction to the night's attack in his diary.

"The Berliners are stunned. They did not think it could happen. When this war began, Göring assured them it couldn't. He boasted that no enemy planes could ever break through the outer and inner rings of the capital's anti-aircraft defence. The Berliners are a naive and simple people. They believed him. Their disillusionment today, therefore, is all the greater. You have to see their faces to measure it.

"Göring made matters worse by informing the population only three days ago that they need not go to their cellars when the sirens sounded, but only when they heard the flak going off▸

> **We went over Berlin and, boy, am I proud! This was the first time Berlin had been raided.** ■ **James Bracegirdle, RAF pilot.**

The British propaganda machine *made sure that the planes didn't just carry bombs. Leaflets also rained down on the Germans as the Allies attacked Berlin.*

nearby. The implication was that it would never go off. That made people sure that the British bombers, though they might penetrate to the suburbs, would never be able to get over the city proper. And then last night the guns all over the city suddenly began pounding and you could hear the British motors humming directly overhead, and from all reports there was a pell-mell, frightened rush to the cellars by the five million people who live in this town."

In reality, the British bombing campaign had not done much material damage – and in any case it caused far less destruction than the bombs over London a day earlier. Most of the RAF's bombs had fallen in an open area south of Berlin, and few houses were destroyed. Only two Berliners were injured, and in the capital's zoo, an elephant was killed by an explosion. Damage was minimal.

But while Berlin was far from devastated, the night's bombs had done damage of a different kind – shattering the Nazis' bullish belief that the capital would forever be Germany's sanctuary. Morale among Germans immediately plunged like a Stuka dive-bomber: *"It was an early sign to those in the regime that the war might be longer and more bitter than many had expected,"* Shirer confided to his diary.

For the British, another bright spot was clear. RAF aircraft were bombing German airfields in Holland, Belgium and France that night. On the Dutch island of Texel in the Wadden Sea north of Amsterdam, flames from the violent explosions lit up the darkness. Factories, railways and power stations across Germany were also ablaze.

On the British side of the Channel, the night's attack – despite the poor return from the Berlin operation – had provided a rare boost to morale. This injection of energy was greatly needed after more than a month and a half of the Germans' incessant bombardment of Britain. One of the RAF's pilots, a young New Zealander, James Bracegirdle, told his home newspaper the *Auckland Star* a few days later:

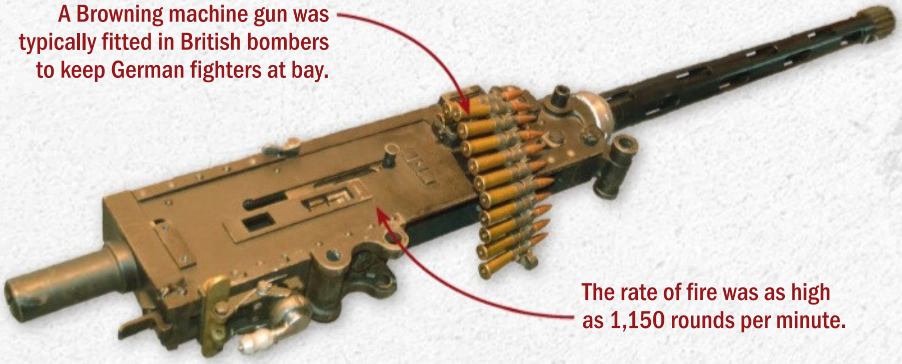
"We went over Berlin and, boy, am I proud! This was the first time Berlin had been raided and, though the RAF has been over since, I am able to say that I went on the first raid… We could quite easily have sold our seats to any of the boys who were not flying. One chap asked me to give him the trip. But I believe it is unlucky to change jobs, so held my own seat. We had a good trip there and back and although it was cloudy, we were able to see our eggs go off."

Berlin's street lights paved the way

Over the following nights, the British continued their raids. Oil refineries, railways, factories, airports, power stations and military bases across Germany exploded in the hail of bombs, while the Luftwaffe devoted its energy to fighting the RAF in the Battle of Britain over the English Channel and the British Isles. During August, bombers took off over 2,700 times from British bases bound for German targets.

When Berlin appeared as the destination during the evening briefing, pilots felt a frisson of excitement run through them. Such anticipation was felt by the pilots of 38 Squadron, who settled behind the wheels of their Wellington bombers on 28th August, taking off and heading over the North Sea as dusk descended. On the clear late summer evening, the pilots could see the coast of Holland 18 kilometres away, and to navigator RJP Warren, Europe lay like a legible map far below him. The engine hummed as he charted the course to Berlin for the pilot.

"We had a perfectly routine trip and arrived over the target soon after midnight. I was amazed to see that the street lights, although very dim, were on and the city's roads were easily identifiable. Part of my target, a power station, was already burning but I hope that my contribution added to the damage. The last bombs of the stick seemed to shatter a large glasshouse, which I assumed was part of a market garden nursery. The return ▸



A Browning machine gun was typically fitted in British bombers to keep German fighters at bay.

The rate of fire was as high as 1,150 rounds per minute.

Winston Churchill symbolised *the British fighting spirit. The prime minister often turned up in person to accompany British bombers as their pilots set off on new missions.*

The biggest fear *among RAF pilots was having to make an emergency landing in the sea. Here, a local fisherman rescues a downed pilot from the English Channel.*

trip was uneventful and we landed back at Marham at 05.15," reported Warren.

Other members of the squadron aboard another aircraft, which had Tempelhof Airport in its sights, also had a successful mission.

"AA fire appeared to be less than expected and nothing like the barrage which is known to be put up over London. Some enemy aircraft activity was seen but no attacks were made on our machines," one colleague reported of their bombing mission.

Ironically, another of the squadron's aircraft did come under heavy anti-aircraft fire as it flew over the North Sea – but this time from British gunners below. Pilot Andrew Jackson couldn't believe what he was seeing from the ground.

"Without warning we were under attack from AA fire coming from our own ships below, presumably protecting a convoy. Having escaped serious damage, we continued our long flight to the German capital. Searchlights and heavy flak were encountered on our flight back but over the target, very little opposition – not what we had expected. We had a clear view of the city of Berlin, the marshalling yards were identified and attacked."

Those who made it through the airspace over Germany to Berlin, saw a puzzling pattern in the Germans' defence: in a semicircle west of Berlin, anti-aircraft guns fired with great force, but once through the barrage unharmed, pilots could navigate almost unhindered over the city's central rooftops.

From his cockpit, one RAF pilot saw fire blazing over Berlin from incendiary bombs British planes had dropped earlier to mark targets for the oncoming aircraft: *"We flew right across the centre*

of Berlin. If we had been bombing indiscriminatingly we could have put our bombs down there but our instructions were to bomb the target and the target only. We were warned about that in no uncertain way. As we got nearer to this fire, I could make out the girders of a huge, gutted building, which was blazing fiercely.

"We circled above it, then when we had satisfied ourselves that this was the target, I decided to go in and attack," the pilot added. *"We flew away a bit to the east, turned around and made a dive attack. Running up to the target, we met with no anti-aircraft fire at all, so that we were able to carry out a careful attack. It was just like a bit of practice bombing."*

Very close to the target, guns began to fire at the machine and the pilot navigated the bomber away from the building after the crew had released the bombs, only to return shortly afterwards to see if the destructive load had done its job. Flames from four new fires burned in a straight line, and satisfied with the mission, the crew returned to the UK.

Goebbels loved the bombings

After the night attack, ten residents had lost their lives. According to journalist William Shirer, the bombings themselves made more of an impression than the death toll.

"For the first time, the war has been brought home to them," he wrote of a city in shock. The Nazis could no longer tone down the attacks, and instead of putting a lid on the night's explosions, propaganda minister Joseph Goebbels thundered against Britain, calling the British attacks ▸

"cowardly" in German newspapers. To his own diary, however, he confided that he saw Berlin's anti-aircraft fire as *"a wonderful spectacle"* and enjoyed the fact that the capital was now *"in the midst of the war and that's a good thing"*.

In London, Churchill and the RAF's top brass sensed how the bombing campaigns against Germany, and in particular its capital Berlin, were boosting the fighting spirit among RAF pilots and hard-pressed civilians alike.

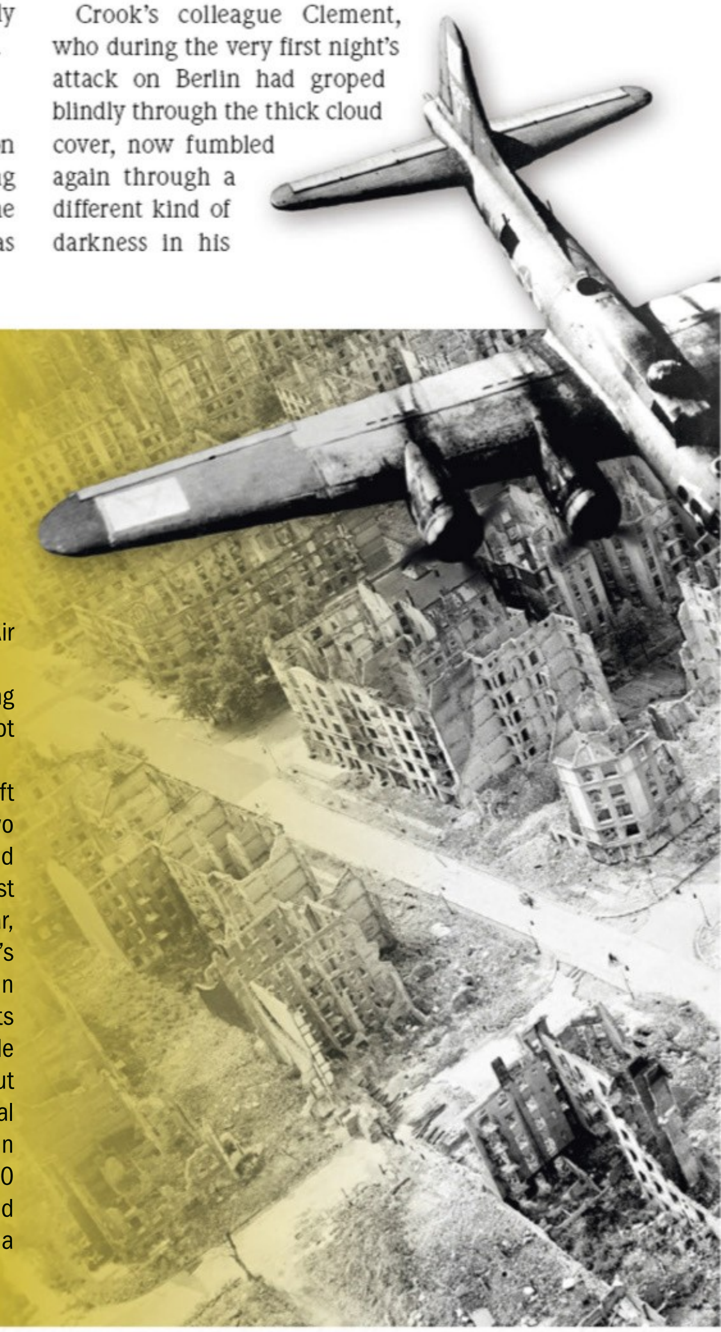
To add to the excitement, the authorities put up posters with maps of Germany in towns across Britain so that residents could keep track of the number of RAF bombings. The Air Ministry also invited a journalist to accompany a bombing raid on Berlin's large Siemens factory and a Henschel aircraft factory. The journalist delivered a tale of heroism and steely pilots giving their all in the service of their country.

Germans reorganised their defences

Things had changed since the first British attack on Berlin on the night of 26th August, something journalists and crews alike were forced to admit. The city's defences had done their homework, and as the RAF pilots approached the city late in the evening of Friday 30th August, the street lights and windows no longer lit up invitingly. Pilot Officer Crooks of 58 Squadron now peered out over a darkened capital where Tempelhof Airport was no longer in sight. He zigzagged his Whitley bomber over the city at an altitude of almost 2,500 metres, releasing a flare to help him find his bearings.

Light now shone down on Tempelhof Airport, and from this position Crooks ordered the crew to drop half their bombs. The explosions lit up the night just west of their intended target, but on the second and third attempts, Crooks and his colleagues finally hit the mark. Flames and clouds of dust rose from the airport runway and surrounding buildings far below the plane.

Crook's colleague Clement, who during the very first night's attack on Berlin had groped blindly through the thick cloud cover, now fumbled again through a different kind of darkness in his



The Allies set Germany on fire

Two years after the first bombings of Berlin, the Allies changed the rules of war and began to terror-bomb Germany.

During the Battle of Britain and throughout the first two years of the war, RAF pilots had strict orders to bomb only strategic targets such as factories, power stations, infrastructure, ports, airbases and military installations. But as the war developed, Britain's government decided to change strategy and "focus attacks on the morale of the enemy civil population and, in particular, of the industrial workers", as Directive 22 on 14th February 1942 dictated. The RAF now had carte blanche to bomb where it hurt ordinary Germans most.

The bombing raids initially targeted primary industrial areas in the Ruhr, such as Dortmund and Cologne, then shipyard towns such as Rostock, Lübeck and Kiel, and finally, widened attacks to other cities such as Frankfurt and Hanover. To avoid misunderstandings, Chief of the Air Staff Sir Charles Portal wrote to his superior Air Chief Marshall Norman Bottomley:

"I suppose it is clear that the aiming points will be the built-up areas, and not ... the dockyards or aircraft factories."

In late March 1942, 234 Allied aircraft bombed Lübeck's historic centre. Two months later, 1,046 aircraft dropped 2,000 tonnes of bombs on Cologne in just two hours. Throughout the rest of the war, Allied forces terror-bombed Germany's major cities, which by 1945 stood in ruins. Hamburg had 75 percent of its residential areas reduced to rubble, while attacks on Mainz and Bochum wiped out more than 80 percent of their residential areas. The bombardment of Dresden in February 1945, in which up to 25,000 civilians died, was particularly criticised because the German army was in such a state of collapse by this point.

> Bomb Britain's cities!
> Bomb London! ■ **Hermann Göring.**

bomber. No recognisable outline was clear below him, and the pilot released a streak of flares over the dark city, but still without managing to locate his target.

Clement decided to turn back but flying home over the North Sea with all his bombs still on board was not a pleasant prospect, because the extra cargo would place even more strain on the tank's fuel. So Clement scouted out the dark landscape for other bombing targets, and near the border with Holland over the German town of Nordhorn, his crew spotted an industrial area where they dropped the bombs. Immediately the bomber was several tonnes lighter, but even though the machine was lightened by weight, the fuel gauge was dropping at an alarming rate toward zero. With the tank drained, the machine flew out over the North Sea. Ahead, Clement had the Yorkshire coast in sight.

The morning sun was just rising over the horizon, turning the bright cliffs golden. But the crew didn't have time to enjoy the sight, as the engine immediately began to rake and cough – an ominous sign that it was trying to suck the last drops of fuel from the tank. It was 05.00 and Clement had been at the controls of the bomber for nine hours and 15 minutes when he made a quick decision and told his crew to parachute out while the plane was still aloft. He would try to make an emergency landing at sea.

The pilot watched his companions disappear into the morning light with parachutes on their backs. He had no idea if he would survive his emergency landing. Three of his crew would also make it safely to shore. But the fifth man was caught by the wind and carried out to sea, where he drowned. Like hundreds of other RAF soldiers, he lost his life in the British bombing campaign against Nazi Germany.

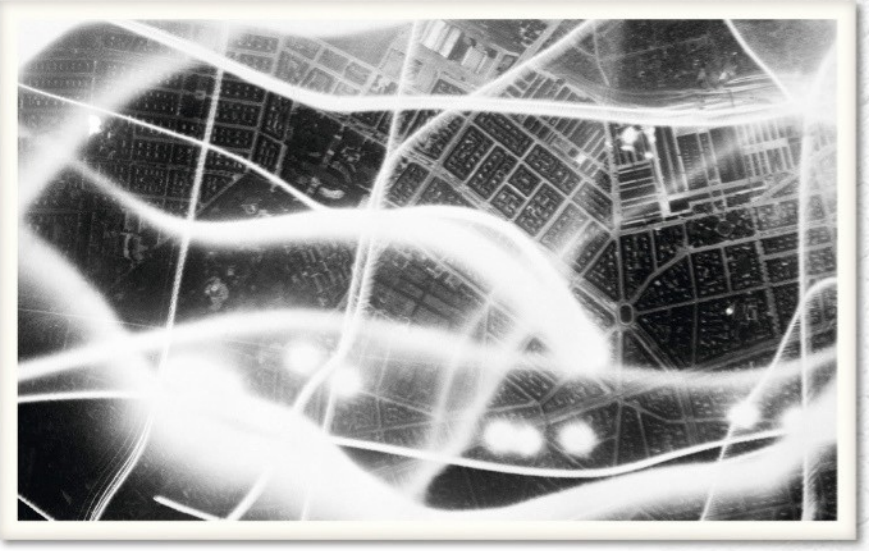
The bombing raids into Germany in 1940 began to become too costly as Nazi anti-aircraft fire expanded. Consequently, the second Battle of Britain drew to a close. But the attacks had made an impact and played a crucial role in the war. After the British bombardments of Germany at the end of August, the Nazi top leadership became confused.

Göring, as the supreme commander of the Third Reich's defences, had promised the Germans that they could call him Meyer if the British attacked the capital. Between Berlin's bombed buildings, in homes and on streets, the air raid sirens came to be known as *"Meyer's hunting horn"*, and in the later years of the war, the hunting horn would blare day after day, night after night.

In early September 1940, Göring, on Hitler's orders, decided that the British should feel the Luftwaffe's merciless vengeance.

The command came: *"Bomb British cities! Bomb London!"* A new phase in the Battle of Britain had been opened with the Blitz – it would exact a heavy toll, but at the same time, Germany's change of focus would save the RAF from being wiped out. ■

In 1943, Hamburg was razed *to the ground by the Allies. The British attacked during the day and the US at night.*



Floodlights create a spider's web of lights *in Berlin's night sky. British bombers had to steer around it as far as possible to remain undetected.*

FACTS

Between July and October 1940, British bombers attacked several German targets. Some

9,180

bombers took off, bound for targets in Germany or occupied Europe.

By Henrik Elling

“I put the plane into a panic power dive”

Colin Bell considered himself an experienced pilot when he took off on his first mission to Hanover, but an encounter with an anti-aircraft gun over Germany still made him panic. And with good reason. Only a quarter of Allied bomber pilots survived more than a couple of years.

You flew missions for the Royal Air Force during WW2. How did you join the RAF and why did you sign up?

In the autumn of 1940, I, like everyone else, followed the heroic battles fought by the Royal Air Force. So shortly after, I decided to enlist. At that time, our training took place in the United States, and I was trained to fly as both a fighter pilot and a bomber pilot. In 1941, I graduated, but unlike my peers, was ordered to stay in the United States as an instructor for new pilots, so I didn’t return to England until 1943.

When did you make your first flight over German targets?

I joined No. 608 Squadron, which was a Pathfinder unit. Our job was to drop markers for the other bombers. We were part of the Light Night Striking Force, which operated at night over Germany, and we bombed industrial areas such as Bremen, Magdeburg, Hamburg, Nuremberg, Dresden and, of course, Berlin. Berlin was the best-defended city in the Third Reich and was surrounded by powerful anti-aircraft guns, which were able to fire to heights of five to seven miles with great accuracy. The guns were guided by searchlights and radar. I flew in the Mosquito bomber and our purpose was to get in quickly, drop markers and bombs, and get out quickly again. My division’s bombers were completely unarmed – we had no guns to use against enemy aircraft. This was to increase the aircraft’s already very high speed. That was our main defence against the German night fighters.

You flew unarmed, so what did you do if you encountered enemy planes on missions?

The Mosquito flew so high and fast that very few enemy pilots could manage to take off and catch us. The Germans tried to counter our lightning attacks by ordering Focke-Wulf 190s to stack over places such as Berlin. They were usually at an altitude of 30,000 feet so they could use their diving speed to reach us. The Luftwaffe called them Wild Boar Squadrons. And they had only one attempt – if their first attack failed, we would be gone. We were told that for every Mosquito over Berlin, there was a German pilot up there, hoping to spot us.

Can you tell what it was like to attack Germany, which was relatively well protected by anti-aircraft guns?

I remember one of the first attacks. By now, I was a relatively experienced pilot from my time in the United States, and I had my experienced Canadian navigator, Doug Redmond, by my side. But neither Doug nor I had any combat experience. Our first raid was on Hanover. When we arrived over the

The Pathfinders *had the most dangerous job among Allied pilots. The crew had to fly relatively low in front of bombers, identify targets and drop markers.*

KIEL. MAY 2ND 1945

Anti-aircraft fire was usually accurate, deadly and very difficult to avoid. ■ Colin Bell on the German Luftwaffe.

target, it was shrouded in thick cloud. That didn't stop the Germans sending up radar-controlled anti-aircraft fire, which was a bit scary for a couple of naive aircrew who had never seen or experienced anything like it before.

We were looking for target indicators, which were supposed to have been dropped by fellow Pathfinders. We couldn't see anything, so we hung around trying to make up our minds what to do. Eventually, after losing height, we bombed on time and distance. On our way back, we passed over Emden. Half a mile ahead we saw anti-aircraft shell bursts. Doug said to me, "Who are they firing at?" A couple of seconds later, we knew. They had got our range, they had warmed up their guns, they were firing at us and very accurately, too. Flashes and bangs all around, much more intense than Hanover. We were pretty shaken because we were inexperienced. I put the plane into a panic power dive at 25,000 feet and didn't come out of it until I was down to about 10,000 feet.

That power dive exceeded all known safety limits for the Mosquito. It could have brought our tour of operations to an abrupt end there and then. On that mission, I discovered, not for the first time, that there was no substitute for experience, whether in war or in business.

How dangerous was it to be a British bomber towards the end of World War II?

When the British bombing offensive reached its peak, we were told that only 25 percent of us would survive if we flew more than 30 missions. That figure turned out to be right. But somehow we could put that knowledge aside – you couldn't think about it during missions.

What did you see as the greatest danger on missions? Were you more afraid of the anti-aircraft guns of the German cities or the Luftwaffe pilots? You encountered the new Nazi jet fighters – can you tell us about that?

We were quick to learn that anti-aircraft fire was really much more of a danger to Mosquito bombers than enemy fighters, apart from jet fighters. Propeller-driven fighters were lucky to get near a Mosquito. But anti-aircraft fire, ever present over targets, was usually accurate, deadly and very difficult to avoid. It then became a matter of chance whether you were hit and if so, what damage might be wrought.

Any aircraft attacking a German target could expect a warm reception, but Berlin was in a class of its own. It was ringed by hundreds of searchlights and what seemed like thousands of anti-aircraft guns. Most of these guns were the formidable 88s and they could fire between 15 and 20 rounds a minute each – and reach up to 39,000 feet. They were lethal. When a battery of these was targeted on you and firing, it could give you one hell of a fright. On one occasion after a particularly nasty experience, I said to Doug, "You aren't frightened are you Doug?" and he replied, "No I am bloody terrified," and that just about summed it up.

What did you do after the war ended? Did you continue flying in the RAF?

After the war, my work continued with Mosquito bombers, but in a completely different way. I was transferred to a ferry crew that was given responsibility for bringing newly built Mosquito bombers from Canada to the UK. And then in 1946 – a year later – I left the RAF. My last mission was to fly diplomatic mail from Britain to embassies in Europe and Africa. ■

Colin Bell *never flew a Spitfire as a young man, which was his dream. In 2018, as a 97-year-old, he was offered a flight in a restored Spitfire and happily accepted.*

COLIN BELL (1921-)

Colin Bell witnessed the Battle of Britain and decided to become a pilot in the Royal Air Force. He was trained at airbases in the United States before returning to Britain and taking part in 50 bombing raids against Germany, 13 of them over the heavily protected capital, Berlin.

> Should they … greatly increase their attacks on our cities, then we will erase their cities!
>
> **Adolf Hitler.**

BLITZ OVER LONDON

The London Blitz 1940-41

The Luftwaffe bombed London *for 57 consecutive nights before its attacks began to subside. The raids laid waste to large areas of the city.*

Blitz over London

On 7th September 1940, an ominous howl sounded over London. German bombers were close to the capital and soon tonnes of bombs would fall on houses, docks, streets and alleys. The Luftwaffe had launched its Blitz, where German pilots would spend the next 57 days targeting and killing as many civilians as possible.

By Mette Iversen

The second the air raid siren wailed, Joan Styan woke up to feel a familiar frisson of fear coursing through her. Despite her initial panic, however, the 13-year-old London girl knew exactly what to do, because this wasn't the first night the warnings had howled across Britain's capital and she'd been in this situation many times. Joan packed a sandwich and drink before rushing to the nearest shelter with her mother.

"When the dreaded air raid siren sounded, suddenly wafting through the air, screeching out its deafening high and low wailing, warning sounds, we were full of fear and trepidation. Wherever we were, we immediately stopped what we were doing, snatched up our few belongings if they were nearby and dashed to the nearest air raid shelter, wondering if we would ever come out alive. It was a nightmare for my mother having three young children to worry about all the time," Joan confided to the WW2 People's War archive when recalling the autumn and winter nights as a child during the London Blitz of 1940.

In the shelter, men, women and children all heard the sky fill with the low hum of German planes. Moments later, the unmistakable sound of bombs whistled as they fell through the air before huge explosions shook the ground and rattled window panes. Bang after bang after bang. When silence once again descended on London, only the sound of crackling flames remained.

Joan Styan was just one of many British civilians who faced the horrors of the Luftwaffe's Blitz – Germany's terror bombing of Britain's major cities from September 1940 to spring 1941. Her father was serving with the Royal Navy in the Arctic, so Joan's mother was left alone to look after the family's

The Blitz's first attack *on 7th September 1940 targeted important port areas along the River Thames.*

children while German bombs rained down on streets and houses. The attacks began when Hitler and Luftwaffe Commander-in-Chief Hermann Göring charted a new course for the Battle of Britain on 6th September 1940. Instead of sending bombers against RAF airbases and strategic industrial areas, the Führer ordered that the bombs be aimed at British civilians. Britain's largest cities found their residential areas and shopping districts targeted indiscriminately as Britons were made to taste the might of Nazi Germany. And nowhere could the Luftwaffe hit harder than London, where nine million people lived close together.

"Many nights we went through hell, with fires blazing and bombs raining down," Joan recalled. *"The sky was continually lit by the glare of the fires, some of which were caused by incendiary bombs that had been extinguished by stirrup pumps. Air raid wardens were equipped with these for such an emergency. Also searchlights illuminated the sky. The wail of the air raid sirens and the drone of enemy aircraft, the bang bang of the anti-aircraft batteries and the shrill whistles blown by the air raid wardens were deafening."*

People slept clutching personal papers

The bombings were so frequent and struck so randomly that residents across the city were forced to sleep with their clothes on, holding on to personal papers and their dearest possessions so they could quickly flee their homes when the sirens sounded. Night after night after night.

Joan's fear of not escaping alive from the nightly raids, combined with the exhaustion of being repeatedly torn from her sleep, was offset by a sense of excitement at being awake by candlelight, ▸

Miraculously, St Paul's Cathedral *avoided being hit by a single bomb during the month-long attack.*

THAT'S HOW...

...London was an effective firewall

In 1666, large parts of London burned down in one of the worst fires in history. In the years that followed, the city was rebuilt along three fire-safe principles: no wooden houses, wider streets and easy access to the Thames.

Although the Blitz set fire to large parts of London, the damage could have been much greater if the city had not been rebuilt with fire safety in mind. The catastrophic Great Fire of London in 1666, which started in a bakery and raged for four days, burned down the entire medieval city – over 13,000 houses and 87 churches. The scale of the disaster demonstrated to city planners that something had to change, so London was rebuilt with new priorities in mind to reduce the risk of fire when a spark went astray.

Until then, firefighters and residents had fought major fires in the city by demolishing houses and creating firebreaks to prevent the fire from spreading. After 1666, streets and alleys were widened instead to reduce the chance of flames leaping from house to house, but the rebuilding was not as radical as some politicians suggested. London's narrow streets were allowed to remain to some extent, forcing other proposals to come into play. For example, wooden houses were banned in the city centre, replaced by stone and brick buildings. Access to the Thames – the vital water supply during fires – was also secured. Large areas along the river were kept free of houses and warehouses, and access roads to the river were built both wide and cobbled.

SHIRLEY'S "BABYLAND"
ALL LEADING MAKERS
PRAMS. COTS BABY CHAIRS. CAMP BEDS. TOYS E
Lowest Prices for Cash only

London's houses were built of stone *after the disastrous fire that hit the city in 1666, to reduce the chance of fire spreading.*

sharing midnight feasts while surrounded by other families in the depths of the night.

"We had one thing in common and that was the will to survive, which was all that mattered. Although tea, like almost everything else, was rationed, there were endless cups of tea to soothe shattered nerves."

In the shelter, the children could nap fitfully on hard wooden bunks, and under Joan lay a boy called Sidney, who always complained that she dropped crumbs from her sandwich on to his bed. The boy loathed cheese and mentioned it frequently.

"Eventually the all-clear siren sounded, which was a steady tone and the sweetest sound on earth. We were free again and dashed out of the shelter to see who the unfortunate victims were and if we could help them," recalled Joan, who could now crawl back into her own bed to get a few hours' rest.

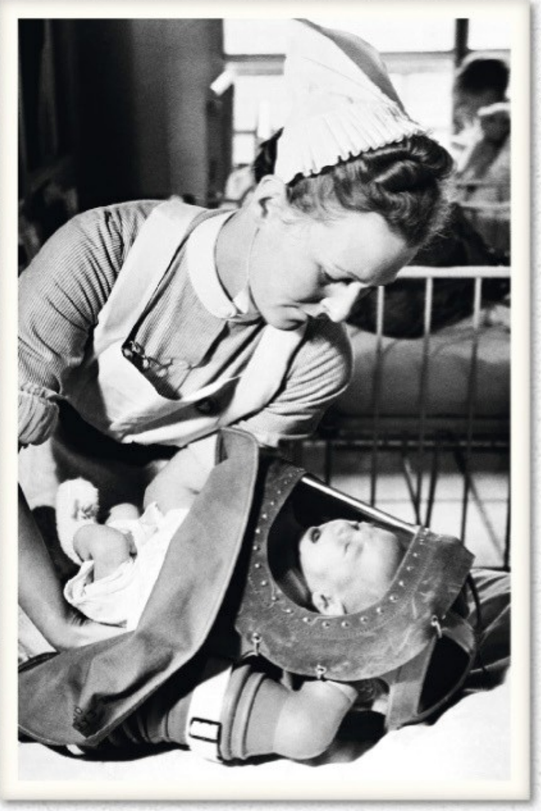
Beware of glass splinters in food

Joan Styan's story is typical of Londoners during the Blitz. Life for most of the population was lived in the shelters, and gradually the German bombings became a kind of routine – even for the children.

Ten-year-old Roy Bartlett was in his parents' hardware store when the siren went off early one day in September 1940. Even before the war began, he'd been instructed how to put on his gas mask properly – *"the first time that I can actually recall being frightened at the prospect of war"*, he later wrote, recalling how he'd cried behind the mask's cellulose window. Later at school, the pupils in his class had been bundled into the shelter several times when the air raid siren wailed – but never had bombs followed the siren.

Consequently, Roy didn't react to the sound of the siren on this September day, but when he heard a deep humming growing louder, followed by cracks from anti-aircraft guns shortly afterwards, he knew that this time the enemy was close. Roy's parents stared in fright at each other and at the customers in the shop, before they all ran outside into the street and then down to the shop's cellar, which had been fitted out after the outbreak of war as a public shelter with bunks and a single bucket toilet behind a hessian screen, which gave off the pungent aroma of carbolic. The same evening, the family had to rush to the cellar again, and this scene played out night after night.

The time in the shelter gave rise to special rituals. For example, anyone sitting on the toilet behind the curtain knew to wait for the noise of a bomber, an explosion or a burst of gunfire before performing any bodily functions in order to drown out unpleasant sounds. The cellar's regulars brought curtains to the shelter to screen the bunks, and they hung family photographs on the walls. In the damp darkness, people huddled together in their one-piece coveralls (known as siren suits) and listened to the radio.



In city hospitals, *nurses were taught how to fit gas masks over patients. Even newborn babies required protection when the siren sounded.*

Roy Bartlett learned to knit during his many hours underground, and together with a 12-year-old neighbour, he picked apart old woollen sweaters and used knitting needles to turn the yarn into blankets for the bunks.

Eyewitnesses recounted the effects of blast pressure from bombs landing close by, and one night the boom from one such bomb was louder than ever. Roy woke up to discover he'd been flung from his bunk by the shock wave. He recalled how *"our ears were popping and painful from the explosive vacuum"*.

The air was thick with choking masonry dust, but despite aching legs and an ankle injury that would require hospital treatment, Roy managed to stand and hobble with the cellar's other inhabitants out on to the street, which was lit by red flames from a fire in the house next door. Where there had been seven shops in a row only the day before, Roy now saw only a hellish-red landscape of ruins and pavement covered with rubble, dust and shattered glass. Even the street's fire station had gone up in smoke.

His parents' shop still stood, but the windows were smashed and their frames loosened. The door to the house had been blown off by the explosion, and inside, both the shop and the family's private rooms above were covered in dust and shattered glass. In the family larder, shards of glass lay on top of pots, dishes and food. But in a war like this, absolutely nothing ▸

7/9 The Blitz begins as 348 German bombers and 617 fighters attack London. The eastern part of the city is particularly hard hit. More than 430 people die and over 1,600 are injured.

edible could be spared, and Roy's mother salvaged what she could from the store.

However, fearing that her son would eat broken glass, she cautioned him in the days that followed:

"Eat slowly, chew it up well, don't gulp it!"

Other than Roy's damaged ankle, the family was unharmed, and the next day the shop reopened.

"We were open already, like no door or windows!" Roy recalled, ironically.

While some fled to cellars when the sirens wailed, others hid in Anderson shelters that had been hurriedly dug in their back gardens just prior to the start of the war. The half-buried shelter was covered over by a layer of corrugated iron, preferably followed by thick earth for added protection. Others had to seek shelter in the London Underground, where platforms and tracks filled with men, women and children dragging blankets and food baskets into the depths. By the end of September, some 177,000 people slept each night in the city's Tube stations, equivalent to five percent of the capital's remaining population. Joan Styan described the scene:

"The Underground at night was a massive picnic with rows of men, women and children all huddled together eating and drinking tea and soft drinks. The air was always stale and there was often a stench of smoke and brick dust in the air, which was frequented by mosquitoes … however, my mother strongly objected to sleeping in the Underground for fear of being trapped. In the station at Balham which was a few miles from Clapham Junction, over 60 people were killed and maimed from a bomb and some were suffocated in their panic and struggle to get out."

Gas masks were issued to all civilians at the beginning of the war.

The government decreed that people needed to have the mask within reach at all times.

Brits fought for space on the Tube

Although no one could guarantee safety in any kind of shelter, the London Underground became so popular that people queued up with bedding and food to sleep on the platforms and even the tracks. Some families sent their children out early in the morning to wait in front of the entrance all day, running down to reserve spots when the porter opened up in the afternoon.

On one occasion, on 24th October 1940, the shouts began to echo as usual along the queue in front of a subway station as its gates opened at 15.30:

"They're opening!"

Despite the police's attempts to impose order, the crowd pressed on. Forward. Downwards.

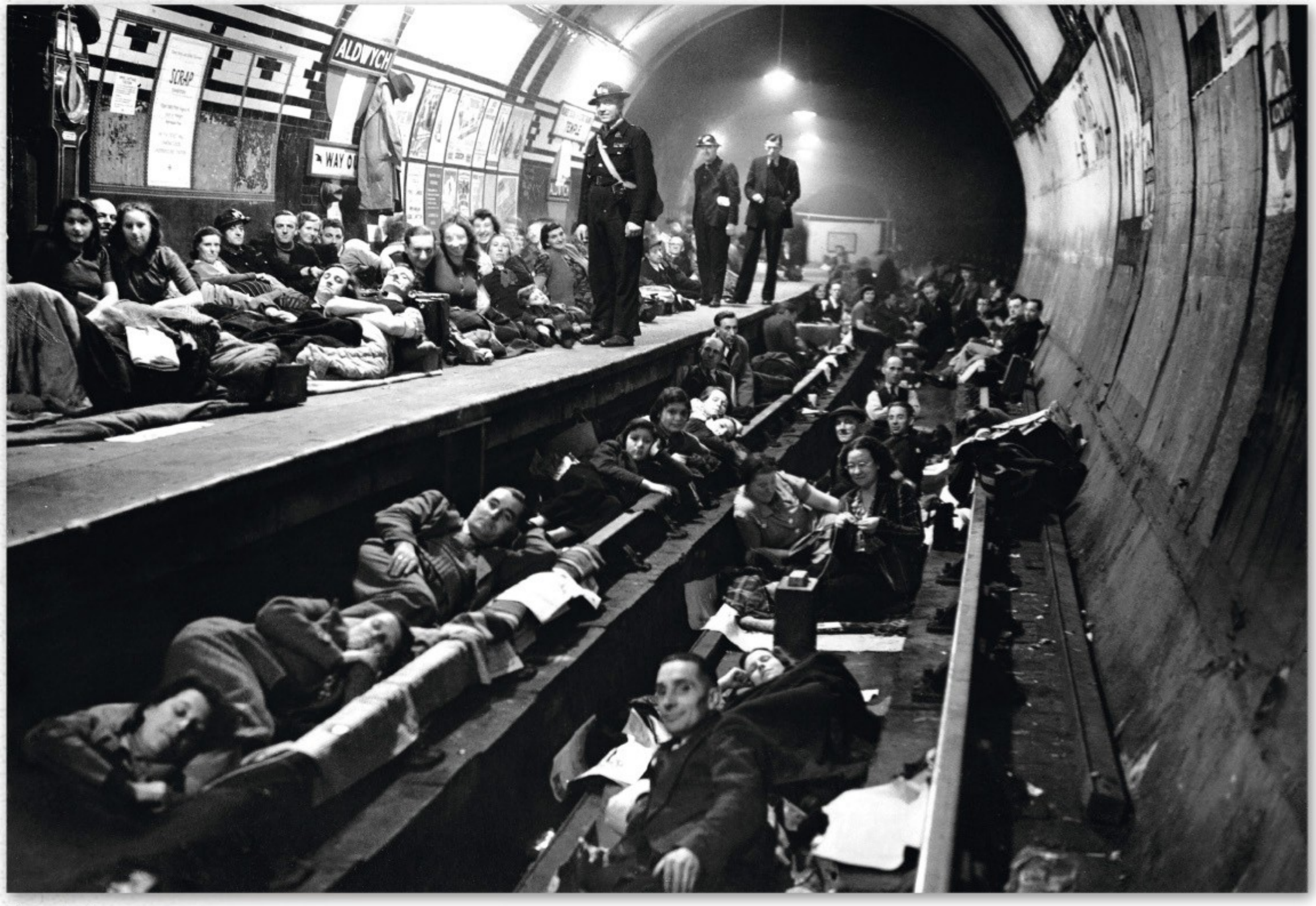
"Some of them have only just come! We've been here since six o'clock in the morning!" was the loud complaint of one woman who was overtaken on her way down to the platforms.

Down on the platform, people ran towards the best spots and quickly spread blankets to indicate the place was reserved. One girl rolled out bedding for her ▸

29/12 The worst bombing raid takes place and results in over 1,400 fires. Six of them destroy entire residential areas.

10/5 The Blitz's last attack takes place in the spring of 1941. More than 11,000 houses are destroyed in the attack and 1,486 inhabitants lose their lives.

Life went on despite the bombs, *and Londoners continued to eat out or borrow books from the library regardless.*



The platforms and tracks of the Underground *were London's safest place. Despite the rough conditions, bed spaces were in high demand.*

entire family, who would arrive later. Another child – a small boy – had been queuing since 06.30, but after he had secured his spot, a platform attendant came along and, against the unwritten rules of the place, pushed him aside to give the space to an elderly lady and her daughter. As the boy watched, crying, a handful of women started arguing with the guard.

"It's wicked to do a thing like that!" one argued angrily. *"Freddie started waiting before it was light this morning. He was up there with the guns going and all, before any of us!"*

"He has that place every night!" another said. But the attendant refused to listen, and the two newcomers sat down shamefacedly on the platform.

"Never mind dearie," said the first woman reassuringly to the boy. *"They shan't get your place tomorrow! I'll keep it for you if I have to take my skirt off to put it down!"*

Criminals sold off sleeping places

Underground sleeping spaces were in such high demand that a black market soon sprang up, with 'droppers' making money selling square metres in the depths. In the queue down to the station, for example, a dropper might squeeze in front and tell the guard that he'd just had surgery and that his stitches would loosen if he queued too long, then rush down to block off spaces to sell. *The Daily Express* reported on 1st November 1940:

"Racketeers now plant members of their gangs in all the favoured Underground shelters. These stooges take up as many as twenty-five places on one platform. Then, when Mrs Brown, of Stepney, arrives with her two children, having been crowded out from one station to another all along the line from Liverpool Street to the City, they catch her in her desperation and say: 'I was keeping this place for a pal of mine, but you can have it – for a couple of bob.'"

The price of a seat varied, depending on how popular the station was. Deeper and therefore safer platforms, such as that on the Central Line at Holborn, cost half a crown, while sleeping places at more vulnerable or less popular stations, such as Charing Cross, could be bought for sixpence.

As with every other aspect of life during the Blitz, the picture in the Underground was mixed. While some chose to lie and cheat, others offered a helping hand by huddling closer to clear the space for yet another distressed family to try to get some rest.

While some managed to sleep, many sat restlessly, passing the time by knitting, writing, smoking cigarettes or chatting. Vera Reid observed a small baby learning to sit up by itself underground at Piccadilly Circus station. Some supported and encouraged each other, while others argued, fought and mocked their fellow human beings.

Fighter pilot Guy Gibson of 29 Squadron found himself seeking shelter in the Underground one night because he couldn't find an affordable hotel. He was walking past sleeping families to find a vacant spot when a woman suddenly called out to him: *"Why don't you get up there and fight those bastards?"*

The uniformed pilot found himself being mocked for his 'cowardly' behaviour, and eventually fled back up to street level, afraid of being torn apart by an angry mob. Gibson had to find shelter elsewhere, and he wasn't the only one. Although thousands of Londoners took refuge in bomb shelters, later estimates suggest that around 70 percent of the capital's residents simply stayed in their own homes during the air raids – most in their own beds.

Homeless lived among ruins

After each night's raids, London's inhabitants never quite knew what they would find. Far from everyone was as lucky as Joan Styan or Roy Bartlett in having a bed to return to after an air raid. Considering the city's size, with nine million inhabitants, a surprisingly large number survived the Germans' massive bombardments. Luftwaffe bombs killed around 13,000 residents during September and October, far fewer than Britain's political and military leadership had feared. On the other hand, night after night, everything from blocks of flats and factory sheds to churches and historic buildings disappeared, replaced by piles of wood, rubble and shattered glass.

As many as 250,000 Londoners lost their homes in September 1940 alone, and despite the helpfulness and hospitality of individuals, there was no plan in place to shelter or feed the thousands of families made homeless. They were left on the streets without food, sanitation, ration stamps, clothes or other possessions.

The authorities converted schools and empty buildings into shelters where homeless families could get bread and a mug of tea, wash and spend their first night. After that, the plan was that they should move on, but the problem was, where? Of the 250,000 made homeless, only 7,000 found new places to stay during the Blitz's first six weeks. Shelters evolved into more permanent places to stay, and by the end of September, 25,000 people were living more or less permanently in the converted centres.

Gioya Steinke worked running the relief centres, receiving hordes of exhausted people every night, all covered in dust and dirt from the bombings. She recalled how it felt:

"It was very distressing, there was a lot of grief and crying. You didn't know who was a street market person and who was a person from the posh flats, they were all reduced down, and this, I think, had a lot to do with the wonderful camaraderie of the war."

After their stay in the centres, some were fortunate enough to move in with family and friends. Other lucky ones were evacuated out of the city, where the rural populace opened the doors to their homes. The authorities were particularly keen to get those dubbed as "useless mouths" out of the city – in other words, people who needed feeding but weren't contributing to the war effort. This included homeless mothers and their children, and by October 1940 as many as 89,000 were evacuated from London. But large numbers of London's homeless still had nowhere to go, so they settled into makeshift structures among the rubble of the city's streets.

For residents who chose to stay in their own destroyed homes, rain poured down through leaking roofs and wind blew in through broken windows. The town's glaziers could not find enough glass to keep up with the destruction, and people replaced windows with boards, cardboard or canvas, leaving their rooms dark. The situation was so bad that Prime Minister Winston Churchill directly suspected the Luftwaffe of deliberately using "magnetic mines and other devices to smash as much glass as possible" so that the British population would freeze to death when winter came.

Buckingham Palace was hit by a bomb

The Royal Family's main London residence wasn't spared either. On 13th September, King George VI and Queen Elizabeth had just arrived from Windsor ▸

FACTS

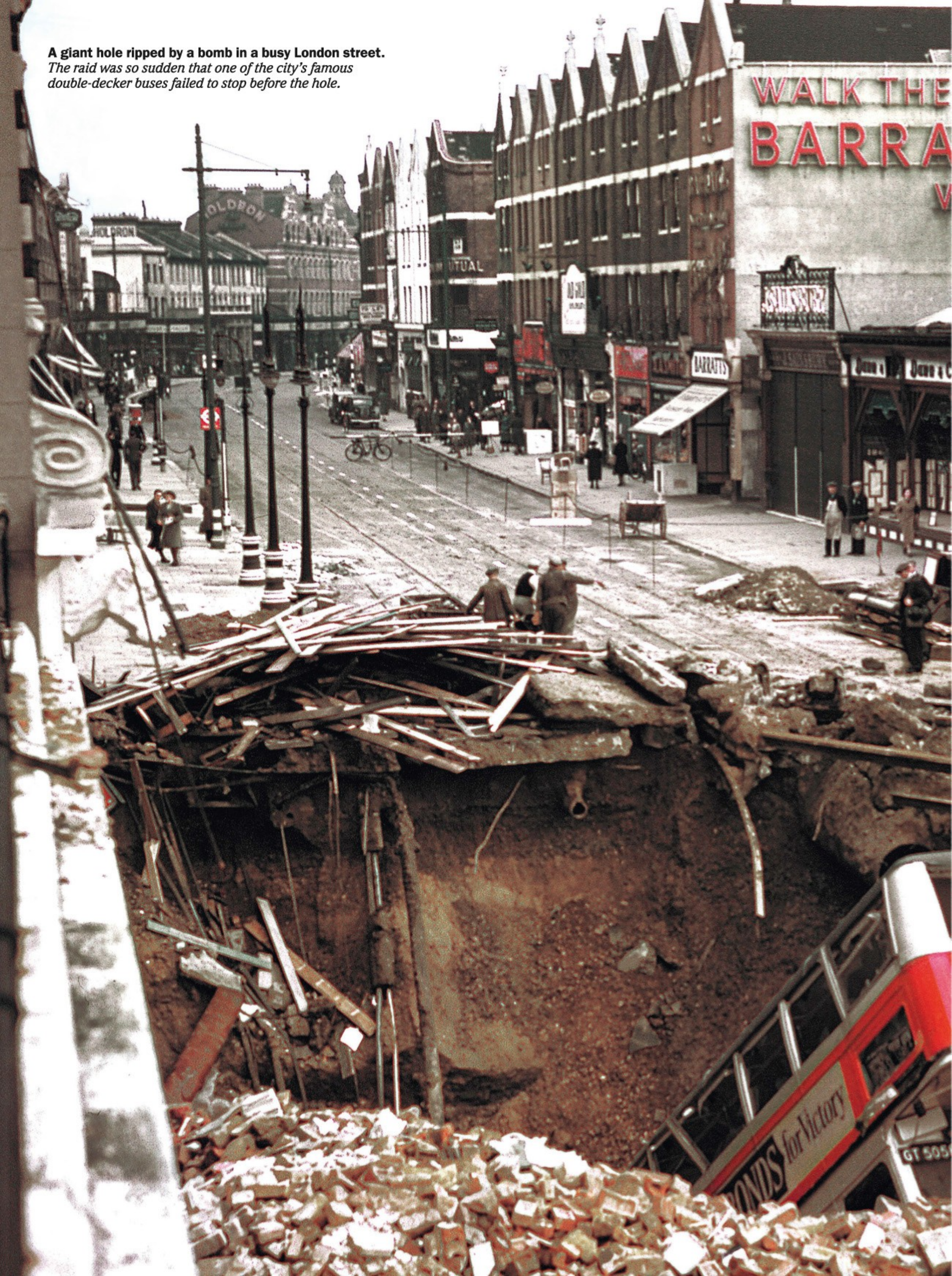
The bombing of British cities resulted in up to

43,000

civilian deaths. In addition, up to 140,000 people were injured.

Anderson shelters were primitive *but surprisingly effective. This shelter survived after a bombing raid left the area's brick houses in ruins.*

A giant hole ripped by a bomb in a busy London street.
The raid was so sudden that one of the city's famous double-decker buses failed to stop before the hole.


WALK THE
BARRA
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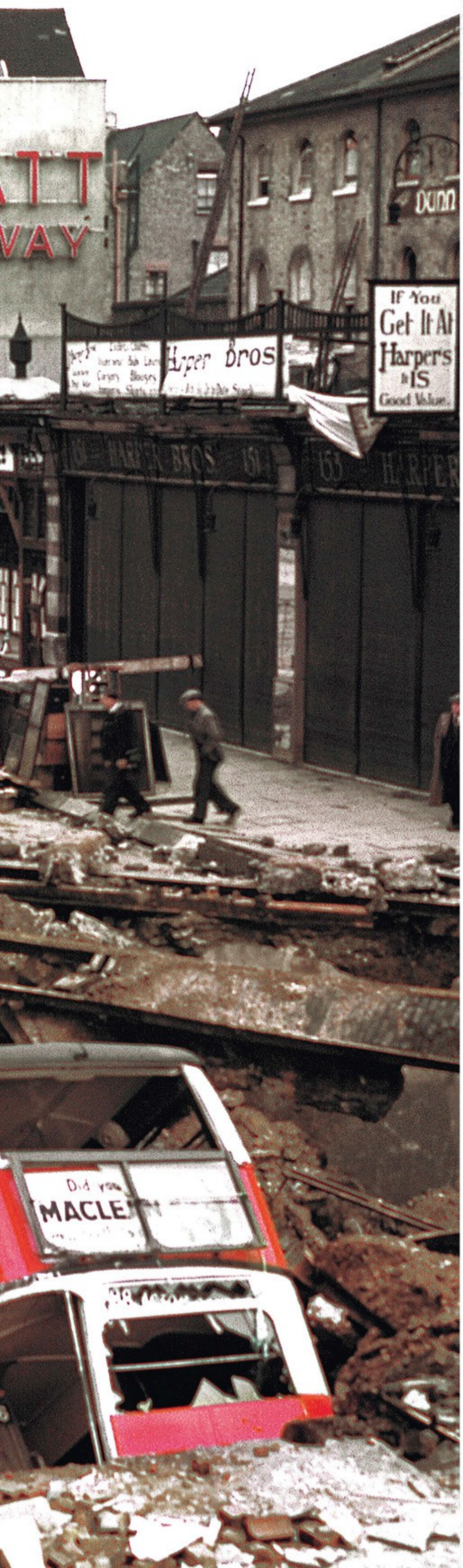
BONDS for Victory
GT 505



Castle, which lies just west of London. Heavy clouds hung over the palace and rain poured in torrents, reducing the risk of air raids. But no sooner had the royal couple made it to the palace's sitting rooms than they saw two bombs whizz past the windows and hit the courtyard. First, two explosions shook the royal residence. Then another and another – and another.

"We looked at each other and then we were out into the passage as fast as we could get there. The whole thing happened in a matter of seconds. We all wondered why we weren't dead," the King wrote in his diary.

A total of five bombs hit Buckingham Palace's chapel, forecourt, quadrangle and even the Queen Victoria Memorial in front of the palace.

"It was a ghastly experience and I don't want it to be repeated. It certainly teaches one to 'take cover' on all future occasions," noted the King, who was unable to relax for a few days afterwards, constantly peering out of the palace windows.

How close the royal couple had come to falling victim to Luftwaffe bombs remained a state secret until after the war. The Queen proclaimed after the attack that she was grateful the bombs had hit the royal family home.

"It makes me feel I can look the East End in the face," was her official statement.

Most Luftwaffe bombs targeted East London, and homelessness hit the already poor East End harder than anywhere else. By contrast, London's iconic St Paul's Cathedral remained almost intact throughout the Blitz and the rest of the war, although even the landmark nearly fell victim to the sea of flames. On 12th September – the day before the bombs hit Buckingham Palace – a two-tonne bomb landed in front of the cathedral.

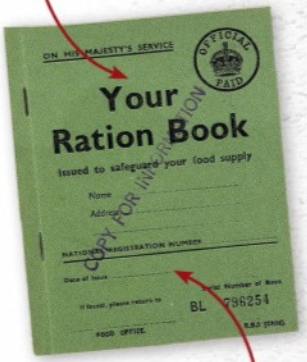
The bomb made an eight-metre hole in the ground but failed to explode. A detachment from the Royal Engineers dug a makeshift ramp down to the bomb, and three days later, with the greatest of care, brought the deadly object to the surface. The sappers were later decorated with the George Cross.

Full moon was biggest threat

In the week following the attacks on Buckingham Palace and St Paul's Cathedral, a full moon provided the Germans with ideal conditions. Churchill took the situation so seriously that he sent a directive to the War Office asking the staff to prepare a specially reinforced bunker in west London called Paddock. Here the government could take refuge and still operate if or when all hell broke loose.

"Be ready to move there quickly… We must expect that the Whitehall-Westminster area will be the subject of intensive air attack any time now. The German method is to make the disruption of the Central Government a vital prelude to any▸

Food was scarce, so ration stamps were issued to all Britons.


ON HIS MAJESTY'S SERVICE
OFFICIAL PAID
Your Ration Book
Issued to safeguard your food supply
Name
Address
COPY FOR INFORMATION
NATIONAL REGISTRATION NUMBER
Date of Issue
Serial Number of Book
If found, please return to
BL 796254
FOOD OFFICE

Food rationing in Britain did not end until nine years after the war.

Network of shelters would house 100,000 inhabitants

Neither cellars nor the Underground was sufficient to house London's millions of inhabitants, so the authorities had to build new shelters.

For two months the Germans had blitzed the capital, and the lack of safe havens was alarming. As ever-more bombs fell on the city of London, the authorities began planning the construction of a vast network of underground corridors; 120 steps below ground, Londoners would be able to crawl into hiding as the bombs fell from above. At least, that was the plan when, in November 1940, the city authorities drew up plans for a network of passageways under and adjacent to Tube lines.

In January 1941, workmen set about constructing the first of ten planned complexes, each intended to house 10,000 people for the night. Each shelter was built as two parallel corridors, 370 metres long and five metres in diameter. In the corridors, rows of bunk beds and cots stretched as far as the eye could see. The corridors were also equipped with canteens and chemical toilets. By the time the first shelters were completed in 1942, the Blitz was over, and for a while only the authorities made use of the passageways. But the V1 and V2 bombings of London in 1944 prompted the authorities to open the doors to civilians in the eight finished complexes.

Each shelter had sleeping quarters for 8,000 people, not 10,000 as first planned. At night, people were issued tickets with a numbered sleeping space, and families whose houses had been bombed were given season tickets so they could return to the same sleeping space each night, allowing them to leave their bedding underground (other belongings had to be lugged back and forth). After the war, the entrances to the underground shelters were walled up, but later some were opened to the public. Others remain hidden behind the brickwork of Tube platforms.

In secret passageways parallel to the Underground, *the huge public shelters built during the war still stand.*

major assault upon the country. They have done this everywhere. They will certainly do it here, where the landscape can be so easily recognised, and the river and its high buildings afford a sure guide, both by day and night," was the message from the Prime Minister, and indeed on 15th September, Hermann Göring deployed more than 1,000 bombers in what was to become known as Battle of Britain Day.

For the British government, Battle of Britain Day was a turning point. During September, while civilians felt the full force of the Luftwaffe, the Royal Air Force was able to recover its strength and slowly secure the upper hand in the air during daylight hours. The price paid was high, however – flames and clouds of dust rose over British cities, and mountains of rubble grew faster than ever.

Thieves stole from the ruins

If the bombings weren't enough, another war began to rage among the ruins: the fight against thieves and rampaging gangs. Far from all Britons wanted to leave home, even if the house was half or completely blown to rubble. Indeed, thieves were lying in wait as soon as a family or shopkeeper left their property to seek shelter. And criminals had a field day. In 1939, London's Metropolitan Police arrested 20,134 people and recorded 94,852 indictable offences. By 1941, those figures had risen to 25,414 arrests and 99,533 indictments, despite the fact that several police officers had been transferred to military service, shrinking the local police force and leaving it short of experienced officers to catch criminals.

It didn't help that London had been blacked out to camouflage the capital from enemy aircraft. Car lights and bicycle lights were painted so that only a narrow strip of light could penetrate the darkness, resulting in hundreds of traffic accidents, while the blackout provided perfect cover for burglars.

After Maggie Edwards's house was bombed and partially destroyed, the family moved in with the girl's grandmother nearby. Still, her mother went by their house every day to light the stove and make sure everything was still how they'd left it. One day, as she approached the house, she saw the front door ajar. Inside, a thief had been at play. The gas meter, where

It blew legs off people, heads off people, and it exploded their lungs. ■ **Ballard Berkeley, British rescuer.**

some of the family's money was hidden, had been broken open, and on the floor, the culprit had left a lead truncheon.

"Obviously the burglar had intended using it if we'd caught him in the act," Maggie said later.

Factory worker William Ryder caught thieves red-handed when – after a bomb exploded in the middle of the street – he ran to check on his parents, who lived a few houses away. The parents had taken refuge in a bomb shelter, but in the meantime, their house swarmed with people *"sorting out the silver, the knives and forks, and they were even killing the rabbits and chickens that Dad kept".*

Twenty-six-year-old hardened habitual offender Jimmy Day was one of those who sat ready with his sack, eagerly awaiting the sound of the siren:

*"I used to pray for a f**king warning, 'cos a lot of these shopkeepers used to run out and leave their shops, leave everything, their shops empty, all the money and that."*

Often, the thieves reached the bombed-out houses before the rescue teams. Actor Ballard Berkeley (later best known for playing Major Gowen in *Fawlty Towers*) served as a special constable, and in March 1941 reached the underground nightclub Café de Paris, where a 50-kilogram bomb had somehow tumbled down the stairs and exploded in the middle of the dance floor. As Berkeley descended into the depths, a horrifying sight greeted him:

"The explosion within this confined space was tremendous. It blew legs [and] heads off people, and it exploded their lungs so that when I went into this place, I saw people sitting at tables quite naturally. Dead. Dressed beautifully without a mark on them. Dead. It was like looking at waxworks."

But the bodies weren't just missing severed limbs. Berkeley noted that many of the dead were also missing fingers, which had been removed with a remarkably straight cut. To operate quickly, body snatchers had cut off victims' fingers to snatch precious rings. *"That, to me, was the most awful thing,"* he later recalled.

One man had taken a job as a demolition worker in 1941 and, as an investigator for the Mass Observation programme, had taken notes of what he witnessed. In the ruins after a night bombing, he found a lady's purse among the rubble, which was empty.

"It's the funniest bloody bomb I ever come across," he noted wryly. *"It's blown every bag open and knocked the money out, it's even knocked the money out of the gas meters!"*

The worker also observed how while some worked exceptionally hard at their jobs, others approached it as a treasure hunt. If someone spotted a shiny coin in the dust, a group would start digging in the same spot. Many children also took part in the greedy hunt for loot – from September 1940 to May 1941, almost half of all those arrested for theft were children.

Artist loved the bombs

Since the Blitz, the stories of cohesion, fighting spirit, helpfulness and that special "Blitz spirit" have been ▸

"Useless mouths" *like women and children were evacuated out of the city while soldiers moved the other way.*

It seems that the whole of London is ablaze. Am going for a stroll to see if I can help in any small way. ■ **Jimmie Phillips, British artist.**

Morrison shelters were made from steel *and could also be used to dine on in the home.*

FACTS

By November 1940, more than a quarter of London's inhabitants had **left the city** for more remote parts of the country. The vast majority of the 1.4 million refugees from London lived in poor, tightly packed neighbourhoods.

told time and again. One of those who felt the bond flourish was Bernard Kregor, who served as a volunteer Air Raid Precautions (ARP) messenger in the hard-hit East End. At night, he patrolled the streets to check residents had blacked-out windows, guided panic-stricken folk into shelters and handed out gas masks when necessary. He also went to bombed-out houses, documented the damage and assessed how best to help people. Although the disasters literally rained down from the sky, he experienced a special community and esprit de corps among the residents:

"During the Blitz people spoke to each other, they exchanged their experiences of the raid the night before, what happened, how it affected them. This was different from a year before," Kregor recalled.

Artist Jimmie Phillips even felt he'd been blessed to live during a special time, writing a letter to his friend on 29th December 1940 as fires raged in the streets:

"Strange to say, one does not get a feeling that one must get away from all this, but rather that God is giving us an opportunity to help the less fortunate and thereby build up a fellowship that will aid in the building of a better world. Things are happening fast in this staid old country of ours. Class distinction is fast being rooted out... Materialism is not so strong today as it was... It's now 11.30 and the room is lit up as though it were broad daylight. It seems that the whole of London is ablaze. Am going for a stroll to see if I can help in any small way."

Psychologists later researched people's reactions during the Blitz and concluded that city inhabitants showed a much stronger mental resilience than they'd expected. That strength was born from everyone being in the same boat. When people huddled together in basements and on underground platforms, they shared the fear. The German bombs were a basic condition for everyone and did not distinguish between rich and poor. As another empowering factor, the British learned that it was actually possible to survive a bombing raid, which contrasted with the pre-war message from the authorities. The belief in survival gave rise to the slogan: "Britain Can Take It!"

Anxious woman murdered her husband

Although this social cohesion surprised researchers, we now know that not everything was as rosy as it was subsequently described. British civilians struggled with homelessness, crime and thousands of deaths. While the disasters ignited charity in some people, the crisis unleashed hopelessness and desperation in others. One woman, Ida Rodway, had been married for nearly four decades when, on 14th November 1940, she was arrested for the murder of her husband, Joseph. Family and friends knew the Rodways as happy and kind, despite Joseph's failing health. He had lost his sight, and age was taking a toll on his mind.

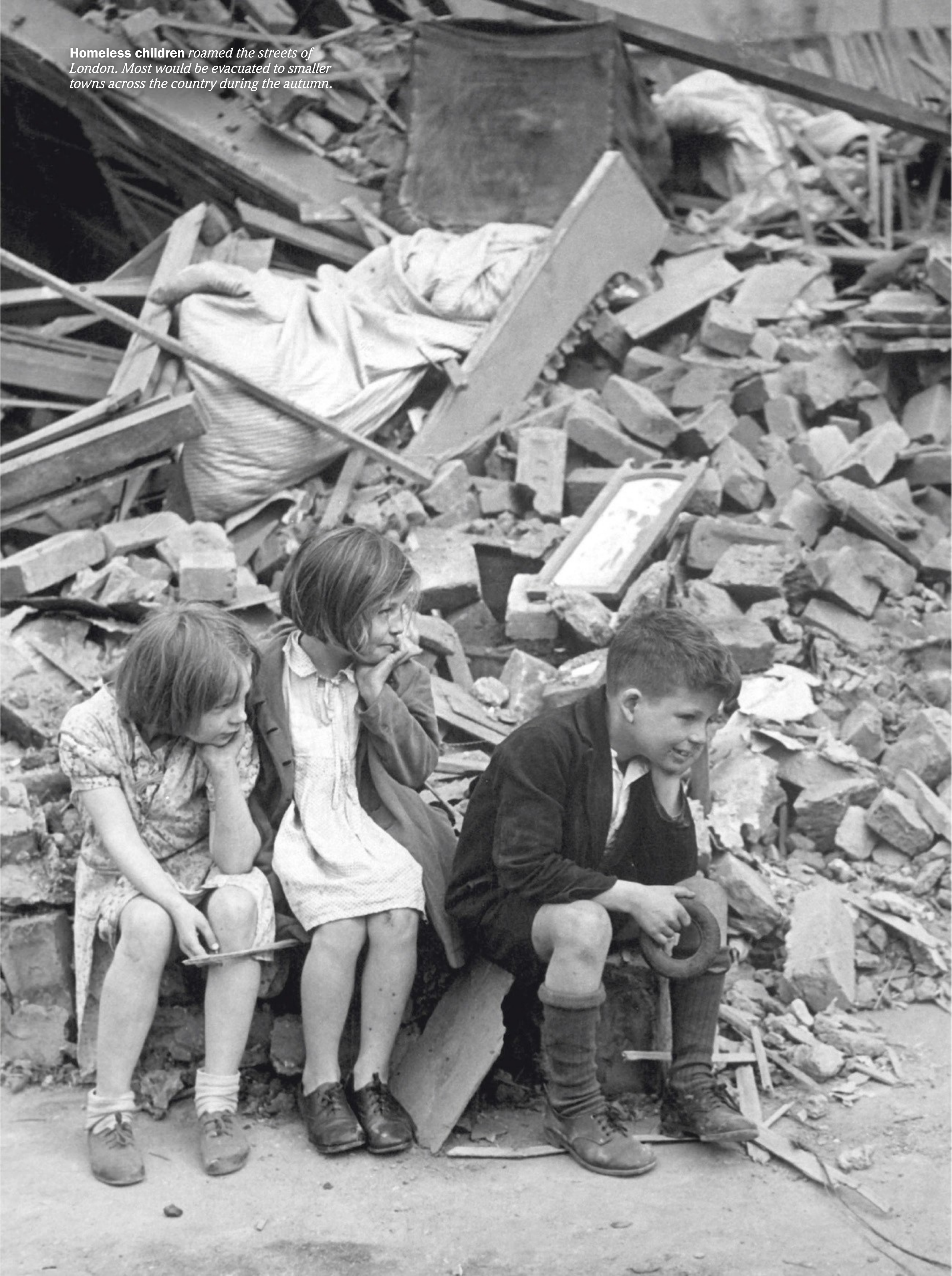
On 21st September, Luftwaffe bombs hit the couple's house, and although they escaped the bombing physically unscathed, Joseph was hospitalised with shell shock. When the husband was discharged, the couple had to take temporary refuge with Ida Rodway's sister, where they slept on mattresses on the floor for a week. They had no place to live, no money, and Joseph lived in a haze with no sense of where he was.

Having wished the bomb had killed them, Ida contemplated suicide. *"I thought to myself: 'Oh, what shall I do?'"*

One October morning, Ida snuck into the back room with a cleaver and a kitchen knife. Her husband was sitting up in bed when she hit him with the chopper, which broke. Shortly after, she slit her husband's throat with the knife. As if in a trance, she staggered out into the street, where she met her neighbour.

"Lil, I've murdered my husband. I want to find a policeman. Will you get one of the wardens?" she said, dazed. Later, at the police station, she explained: *"He was my husband. I was worried about him. He was blind. We were bombed out of our home and I had nowhere to go and nobody to help me. I was worried to death. I don't know what made me do it."*

Lack of sleep also drove city residents to the brink of collapse. Not only did they have to try to sleep on the hard bunks of the shelters or on blankets directly on Underground platforms while the sirens screamed overhead, but the perpetual sounds of war also kept the British awake night after night. One survey of residents revealed that a third said they got no sleep at all on the night of 11th September, while another ▶



Homeless children *roamed the streets of London. Most would be evacuated to smaller towns across the country during the autumn.*

MEN AND WOMEN served in the fire brigade

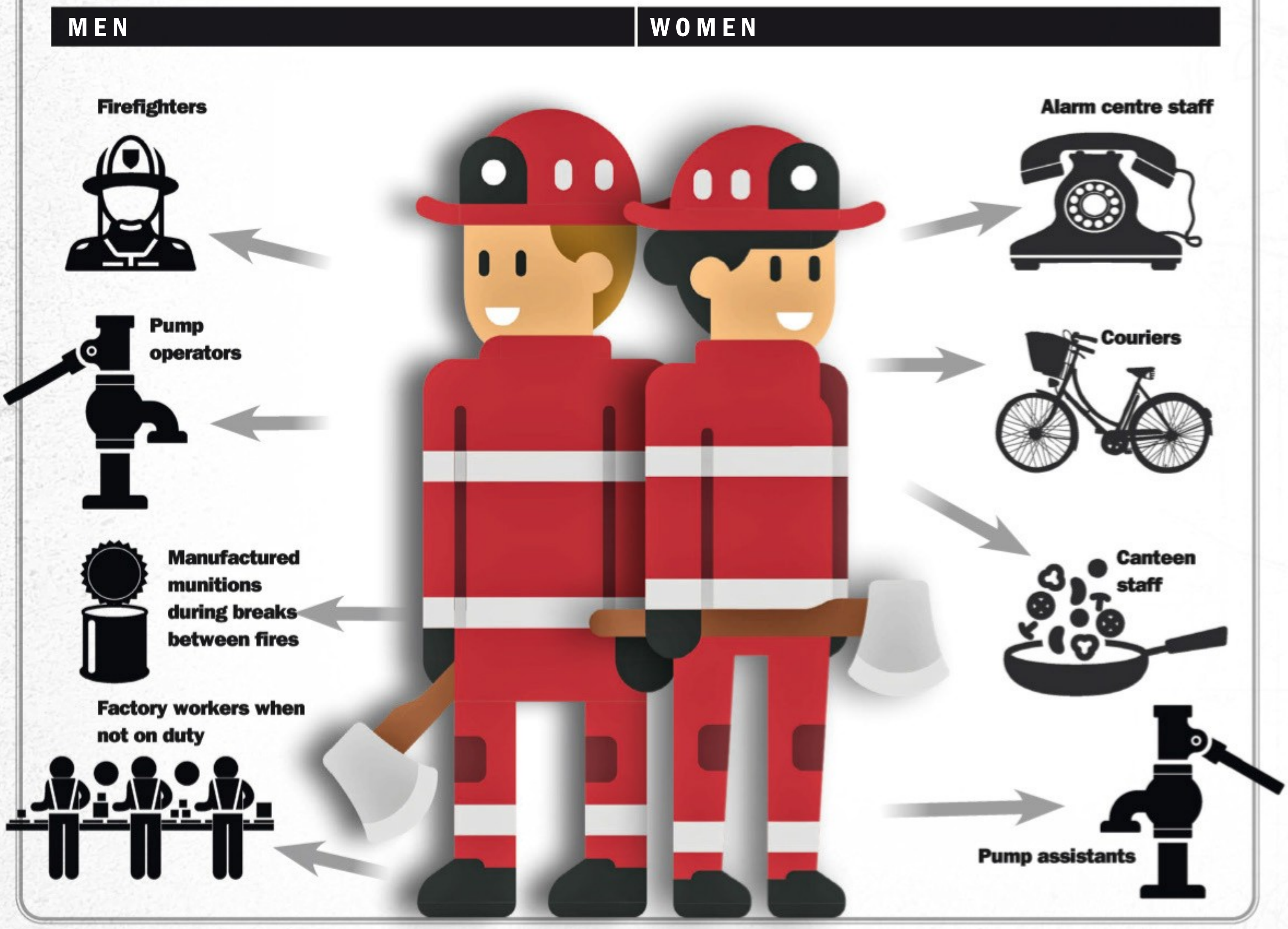
The British government acted in 1937 to set up an auxiliary fire brigade based on volunteer labour. Over the next few years, thousands of British men – and later women – were trained to step in when war broke out.

In 1937, as the threat from Germany grew, Britain passed the Civil Defence Act, which set up the Auxiliary Fire Service (AFS). London had trained around 23,000 voluntary firefighters by the outbreak of war, and when the Germans invaded Poland, the auxiliary firefighter force was mobilised and equipped.

During the Battle of Britain, the number of men serving as firemen swelled to 273,000 nationwide. In addition, 70,000 women performed both full- and part-time duties for the AFS. Volunteers worked 48-hour shifts and then had 24 hours off.

When not fighting fires, the men often produced munitions on the premises of fire stations, and in their spare time, many firemen worked in munitions factories. From headquarters, equipment, assignments and other items were sent by female couriers to the fire stations.

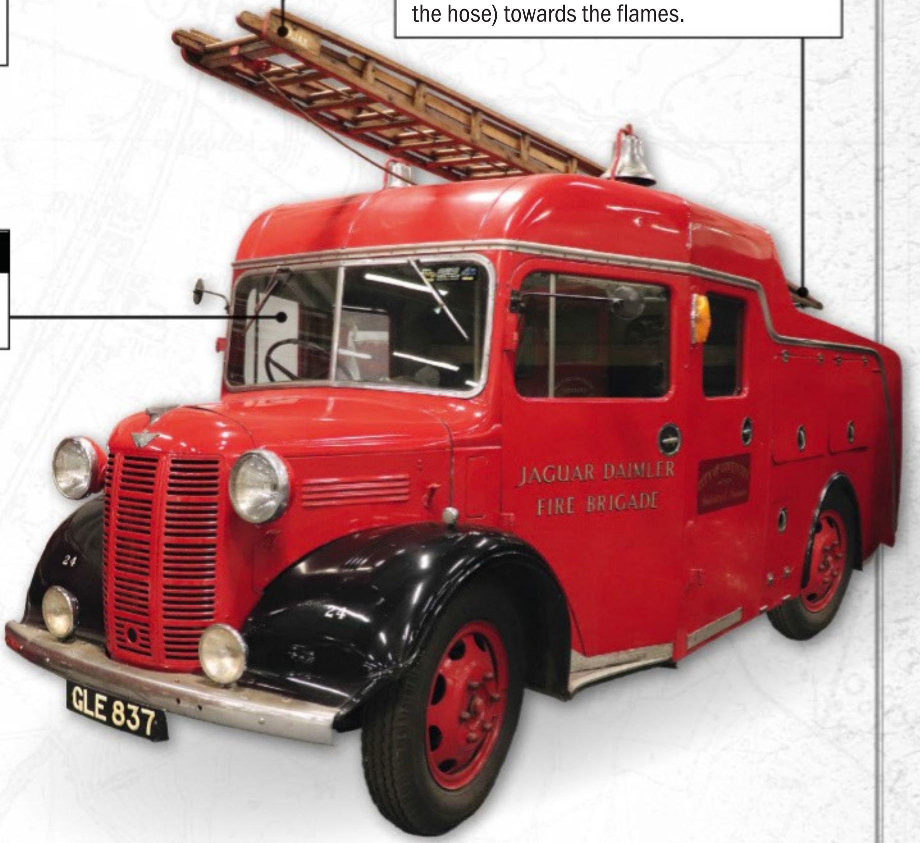
The women were unusually allowed to ride motorcycles, and the role could be deadly, especially as the couriers drove through London's darkened streets with only a thin beam of light from their headlights to light their way as fires blazed around them and the danger of explosions lurked.


MEN
WOMEN
Firefighters
Pump operators
Manufactured munitions during breaks between fires
Factory workers when not on duty
Alarm centre staff
Couriers
Canteen staff
Pump assistants

FIRE ENGINE could reach everywhere

In some parts of London, streets and alleys were too narrow for even the city's tiny fire engines. To get around this, they were equipped with a revolving ladder that could be extended into the city's recesses.

The Austin K2 *was the most common British fire engine during the war.*



Ladder could be turned in all directions

The ladder was placed on a turntable at the rear, which could rotate 360 degrees. At the same time, it could be extended and pushed into narrow alleys. This allowed London's firefighters to reach fires all over the city.

Hoses seated on the ladder

The firefighters had the option of fitting a nozzle to the end of the ladder to fight fires by simply directing the ladder (and therefore the hose) towards the flames.

Number of men in the truck

Up to six men manned the fire engine during a call-out.

Pump came by taxi

During one raid, an anonymous taxi driver decided to mount one of the fire brigade's important but heavy pumps on his taxi and transport it to the fire. Soon after, London's many taxis, equipped with pumps, followed right on the heels of the fire engines.

Number of fire stations shot up

Across London, emergency firefighters staffed 300 rapidly built fire stations in residential areas and city centres.

London's official fire service had 59 well-equipped major stations before and during the war, which were strategically located.

The fire service also built three river stations to cover the Thames and extinguish fires on ships and in docks.

300

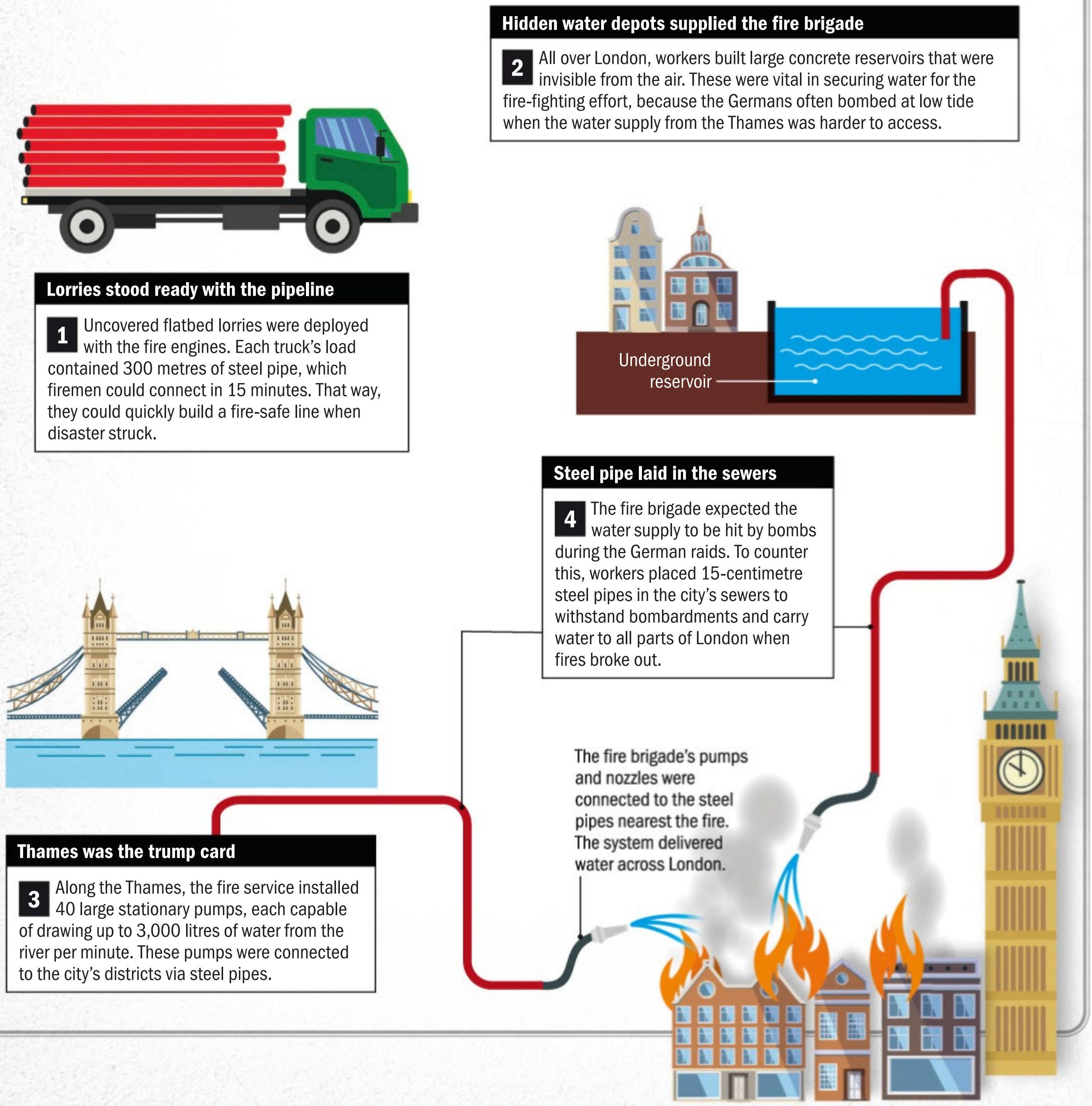
59

3

STEEL PIPES

could withstand the bombs

London's water supply was in danger of being destroyed by the German Blitz, so workers were tasked with building bomb-proof water reservoirs all over the city, along with laying kilometres of steel pipes in London's sewers.



Lorries stood ready with the pipeline

1 Uncovered flatbed lorries were deployed with the fire engines. Each truck's load contained 300 metres of steel pipe, which firemen could connect in 15 minutes. That way, they could quickly build a fire-safe line when disaster struck.

Hidden water depots supplied the fire brigade

2 All over London, workers built large concrete reservoirs that were invisible from the air. These were vital in securing water for the fire-fighting effort, because the Germans often bombed at low tide when the water supply from the Thames was harder to access.

Thames was the trump card

3 Along the Thames, the fire service installed 40 large stationary pumps, each capable of drawing up to 3,000 litres of water from the river per minute. These pumps were connected to the city's districts via steel pipes.

Steel pipe laid in the sewers

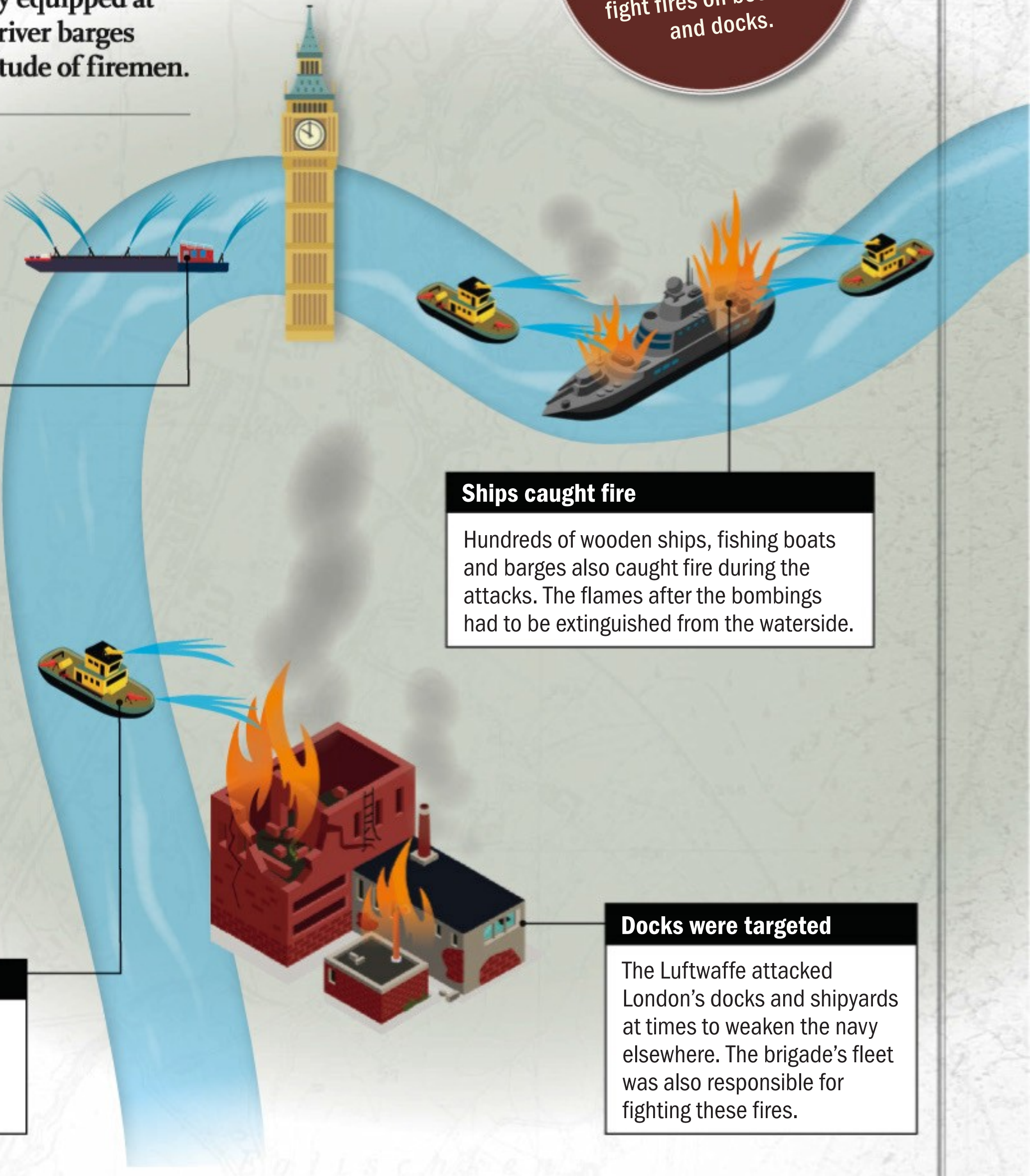
4 The fire brigade expected the water supply to be hit by bombs during the German raids. To counter this, workers placed 15-centimetre steel pipes in the city's sewers to withstand bombardments and carry water to all parts of London when fires broke out.

The fire brigade's pumps and nozzles were connected to the steel pipes nearest the fire. The system delivered water across London.

FIREBOATS patrolled the Thames

London's aquatic fire brigade was heavily equipped at the outbreak of war, including a fleet of river barges armed with pumps, nozzles and a multitude of firemen.

Each vessel's pumps could spray **3,785 litres** of water per minute to fight fires on both ships and docks.



River barges could reach anything

Four new barges were built for the London fire brigade's fleet. The large, flat-bottomed barges were equipped with pumps and hoses that could be turned in any direction while extinguishing fires.

Ships caught fire

Hundreds of wooden ships, fishing boats and barges also caught fire during the attacks. The flames after the bombings had to be extinguished from the waterside.

Fireboats were small and fast

Twenty new fireboats joined the fire service fleet. The smaller boats had a stationary nozzle mounted in front and therefore had to attack the fire front-on while facing the flames.

Docks were targeted

The Luftwaffe attacked London's docks and shipyards at times to weaken the navy elsewhere. The brigade's fleet was also responsible for fighting these fires.

327 firefighters died in the flames

By the end of the war, London's fire brigade had responded to more than 50,000 fires, and the reputation of firefighters had soared in the eyes of the British public. During World War I, British civilians had viewed male firefighters as cowards trying to avoid being sent to war, but working under fire was so dangerous that the firefighters became known to the public as "the heroes with grimy faces", and even Winston Churchill personally praised the men for their bravery.

Three hundred and twenty-seven London firefighters lost their lives in the flames during their heroic work and many more were hospitalised with smoke inhalation or fire injuries. In August 1941, the National Fire Service took control of the volunteer auxiliary fire brigades and firefighting was coordinated nationally until the end of World War II, when the cities were safe again.

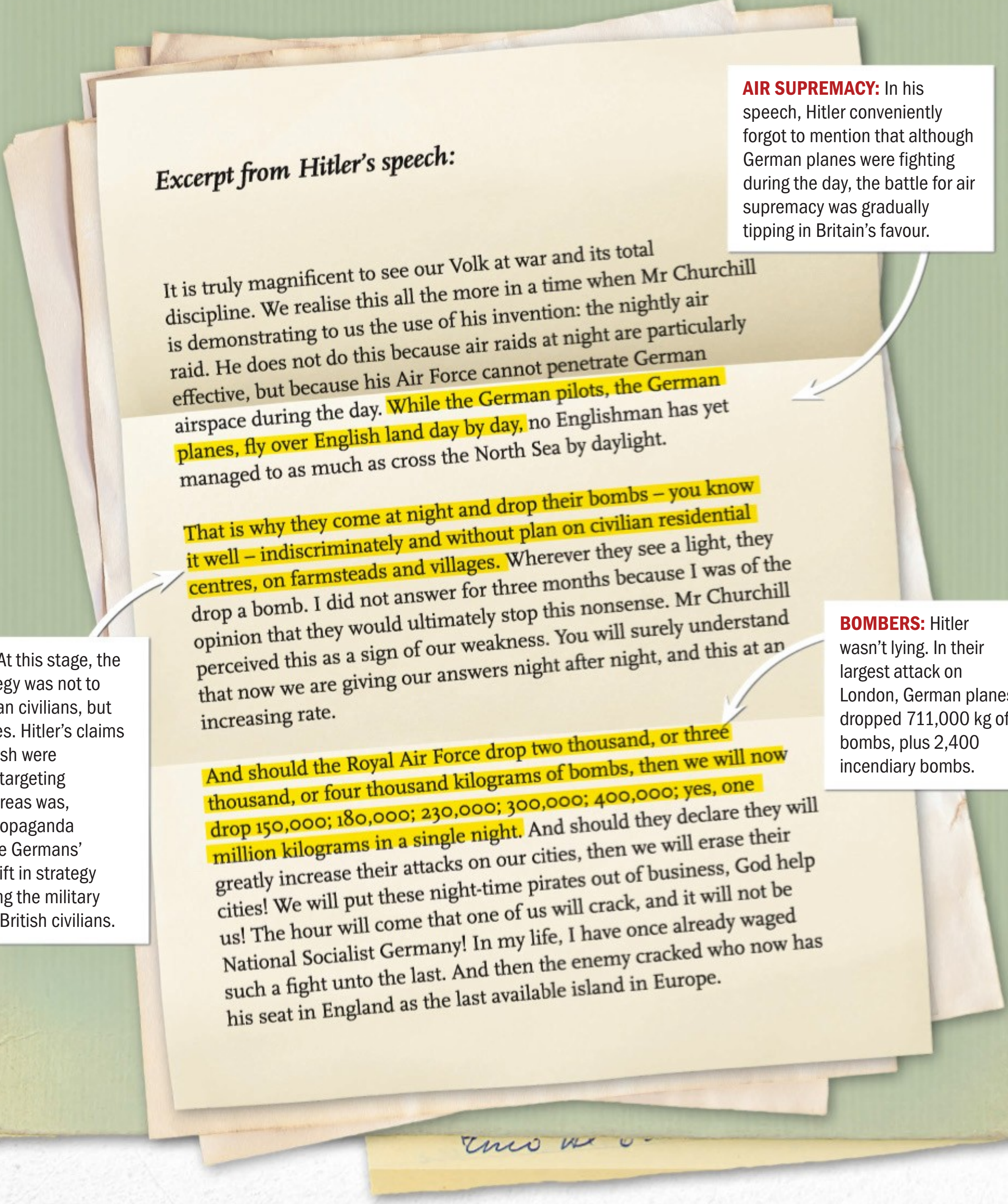
SPEECH IN BERLIN

4th September 1940

Hitler called the British cowards

Shortly after British air raids on Berlin in late August, Hitler spoke before thousands of spectators in the city. The Führer claimed the British attacks were indiscriminate and promised that revenge would hit hard.

The deafening cheers of the Sportpalast arena's spectators thundered every time Hitler finished a sentence, continuing only until the Führer raised his hand to hush the masses. For months, British bombs had hit German factories, shipyards, railways and other strategic targets, and just over a week earlier, Royal Air Force bombs had also struck the capital. Hitler knew that the bombs could not simply destroy buildings, but also German morale. So, to galvanise the Germans, he promised in his speech that the Luftwaffe would respond to each attack with up to a hundred times as many bombs until the final German victory. At the same time, he portrayed the British night bombing raids as a sign that they were cowards who did not dare to attack during the day. Soon after, the Germans themselves changed strategy, bombing almost exclusively at night.



Excerpt from Hitler's speech:

It is truly magnificent to see our Volk at war and its total discipline. We realise this all the more in a time when Mr Churchill is demonstrating to us the use of his invention: the nightly air raid. He does not do this because air raids at night are particularly effective, but because his Air Force cannot penetrate German airspace during the day. While the German pilots, the German planes, fly over English land day by day, no Englishman has yet managed to as much as cross the North Sea by daylight.

That is why they come at night and drop their bombs – you know it well – indiscriminately and without plan on civilian residential centres, on farmsteads and villages. Wherever they see a light, they drop a bomb. I did not answer for three months because I was of the opinion that they would ultimately stop this nonsense. Mr Churchill perceived this as a sign of our weakness. You will surely understand that now we are giving our answers night after night, and this at an increasing rate.

And should the Royal Air Force drop two thousand, or three thousand, or four thousand kilograms of bombs, then we will now drop 150,000; 180,000; 230,000; 300,000; 400,000; yes, one million kilograms in a single night. And should they declare they will greatly increase their attacks on our cities, then we will erase their cities! We will put these night-time pirates out of business, God help us! The hour will come that one of us will crack, and it will not be National Socialist Germany! In my life, I have once already waged such a fight unto the last. And then the enemy cracked who now has his seat in England as the last available island in Europe.

AIR SUPREMACY: In his speech, Hitler conveniently forgot to mention that although German planes were fighting during the day, the battle for air supremacy was gradually tipping in Britain's favour.

BOMBING: At this stage, the British strategy was not to bomb German civilians, but war industries. Hitler's claims that the British were deliberately targeting residential areas was, therefore, propaganda to defend the Germans' imminent shift in strategy from targeting the military to aiming at British civilians.

BOMBERS: Hitler wasn't lying. In their largest attack on London, German planes dropped 711,000 kg of bombs, plus 2,400 incendiary bombs.

third slept less than four hours. Fewer than one in six had slept more than six hours.

The Home Intelligence government agency, which investigated civilian issues during the war, concluded that those who lived near anti-aircraft guns suffered from severe sleep deprivation. Through a series of interviews with West Londoners, they discovered massive variations in people's sleep patterns within just a few hundred metres of each other.

"It's not the bombs I'm scared of any more, it's the weariness … trying to work and concentrate with your eyes sticking out of your head like hat pins, after being up all night. I'd die in my sleep, happily, if only I could sleep," wrote one woman who, like hundreds of other Britons, had signed up for the Mass Observation project, in which volunteers kept diaries about everyday life. US war correspondent Virginia Cowles described the collective sleeplessness:

"Conversation was devoted to one topic only: where and how to sleep… Everyone had theories on the subject: some preferred the basement, others said the top of the house was safer than being trapped under debris; some recommended a narrow trench in the back garden, and still others insisted it was best to forget it and die comfortably in bed."

Despite the nights of blaring sirens and scrambling to find the nearest shelter, despite the sleeplessness and desperation, a large proportion of the population continued to go to work and school. Even cinemas and theatres invited guests in for performances – assuming the building itself hadn't fallen victim to German bombs.

Germans attacked the entire country

In September and October, Göring committed most of the Luftwaffe's forces to destroying morale in London, but during November, the German air force spread its bombers over Britain's other major cities. Residents of Bristol, Portsmouth, Plymouth, Coventry, Sheffield, Manchester, Liverpool, Hull, Birmingham, Southampton, Belfast and Glasgow now also fell victim to the Blitz.

When the Luftwaffe attacked Southampton on 30th November 1940, 27-year-old Gwen Hughes had taken refuge with her two infant children, Gloria and Anthony, along with the family's two dogs and a litter of puppies, in a medieval cellar that had been ▸

Britain's wartime leader, *Winston Churchill, refused to leave London because he didn't want to panic the population.*

> The bombing was nothing but sheer wanton destruction. No military objectives whatever, simply residential and business districts. ■ **Winifred Graville, Sheffield horticulturist.**

converted into a shelter. Her husband, Monty, was on night duty as a fireman that evening, when the siren filled the air above the town with its ominous wail. Gwen took her remaining cigarette from its packet and asked for a light, apologising for not having any more to share around. The children were still sitting awake in their siren suits. The cigarette had just started to glow when the brick wall in front of Gwen collapsed with a crash. A bomb had struck immediately above the cellar. The man who'd lit Gwen Hughes's cigarette was killed instantly under the collapsed wall. But the tragedy had only just begun. With a dull, metallic sound, a bomb now rolled into the basement and exploded in the middle of the assembled group. From that point, it was just a blur for the terrified mother. All she could see was a mess of bricks and dust and all she could hear were screams. Gwen tried to spit dirt and dust from her mouth. She couldn't move her head, but she could feel Anthony's head under one of her hands.

"Mummy, mummy, are you alright, Mummy?" she heard her daughter shout, but she was unable to answer. Time passed, and then somewhere in the darkness Gwen could hear her husband calling desperately for her.

"Come and help me! My family's under there!" Monty Hughes roared plaintively.

"No good going down there, mate! They're all finished!" came another man's voice.

But Gwen's husband had no intention of giving up. Together with a few others, he started digging. The ground was damp from a water main that had been severed in the explosion and the levels were starting to rise in the bombed-out cellar.

"What are we going to do if we can't get them out?" Monty asked in despair. The answer was not

Floodlights illuminated *the sky to help anti-aircraft guns spot German bombers on dark nights.*

comforting: they should be shot to save them from the misery of drowning.

Gwen gathered the strength to finally find her voice. *"How are the children?"* She asked.

Monty was able to tell his wife, still buried alive, that Gloria was safe, but that he'd not yet found Anthony. Gwen lost consciousness, but when she came to, Monty could now relate that both children were alive. Her hand over Anthony's head had probably saved his life.

Gwen, Gloria and Anthony Hughes were the only survivors of the 28 people who'd taken refuge in the basement that night. Remarkably, her only serious injury was a blow to the leg from a pickaxe used to dig them out. It broke her foot and her hand was bruised, but otherwise Gwen and her children were unharmed. She was carried into the street as the flames rose as high as the houses on either side. Bombs still fell around her from the night-black sky as she was rushed to another shelter by the harbour, where her children waited. As many as 128 German bombers dropped their loads over Southampton that night. The glow from the fires could be seen as far away as France. The following night the Luftwaffe attacked again with 123 bombers – 137 residents lost their lives over the two nights' fierce attacks; 96 of them had been in shelters that had collapsed.

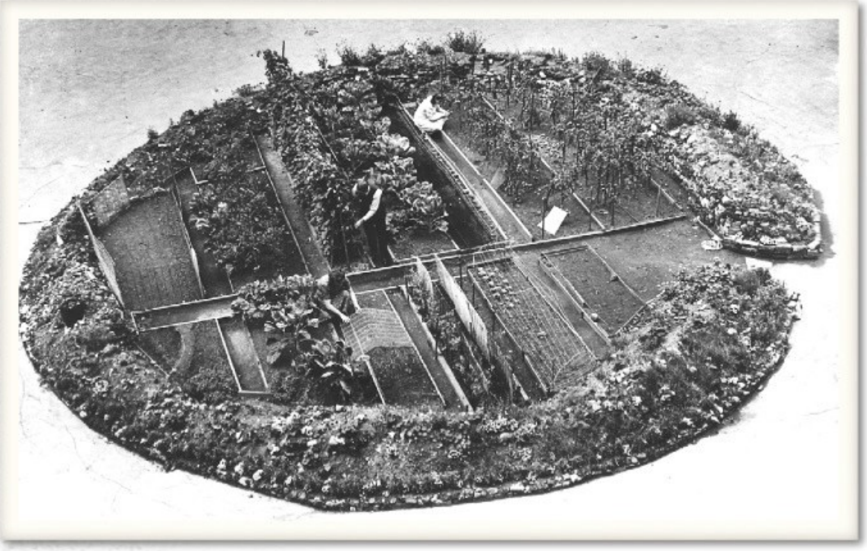
Luftwaffe struck Britain's steel heart

Two weeks later, Sheffield came under fire as sirens at 19.00 warned of German bombers approaching. The steel city housed munitions factories, strategic targets for the Luftwaffe. A swarm of 280 bombers roared over Sheffield, dropping 10,000 bombs on streets, houses, factories and residents in just one night.

"How is it that I am alive, I cannot understand. Last night we had nine hours' continuous bombing at the rate of three a minute. It was terrible. Never shall I forget it. Today I had to go into the city and the scenes I saw were appalling. The bombing was nothing but sheer wanton destruction. No military objectives whatever, ▶

FACTS

After the war, Britons cherished the story of how, under the Blitz, they came together in **national unity** across class lines. Historians have since dispelled that myth, pointing out that anti-social behaviour was sadly extremely commonplace during the Blitz, as crime rates rose during the period.



"Victory gardens" *was what the British called the vegetable plots they planted in London's many bomb craters.*

simply residential and business districts. The city was a raging inferno at 05.00... It had been a night of almost unearthly brilliancy, the moonlight was startling clear. So there was no excuse for the indiscriminate bombing," wrote horticulturist Winifred Graville the next day – 13th December 1940 – in a letter to her family in the US.

The British gardener continued her report about what became known as the Sheffield Blitz:

"When two awful explosions occurred close together, the house rocked, tilted, stayed poised for what seemed ages, though probably was only for a second. I looked at the ceiling and wondered whether the pendant electric lights would strike me. There wasn't time for us to lie flat. Fortunately the house righted itself. It almost seemed as if the house paused to think. It was a breathtaking moment."

On the evening of 28th January 1941, factory workers at the Varley Magnet Company, a radio manufacturer in Woolwich, south-east London, heard the air raid siren wailing over their heads. Among the workers was newly-wed Maisie Dance, who fled with her colleagues to the factory shelter. Maisie was one of the last in line, and as she stretched one leg over the threshold of the shelter, a bomb exploded nearby. The young woman was hit by the blast and taken to St Nicholas Hospital with serious injuries.

"I'm sorry, but your wife has been very badly injured in a bombing raid," was the message to Maisie's husband, Albert, who was serving in the army. The news was conveyed by his superior, who immediately poured him a whisky. Albert had survived Hitler's Blitzkrieg in France in May 1940 and had been one of the last evacuated from Dunkirk on 4th June. Now his wife had been injured at her workplace. He rushed to his wife's ward.

"She was a beautiful girl with lovely hair. Her hair was all matted with oil, her face was bashed, stones were embedded in her cheeks. She was crying with pain because her back was shattered and her arm was shattered. It was awful."

Albert Dance watched over his wife. The wounds under her bandages emitted an unpleasant smell, and Albert brought bouquets of dried lavender into the living room to mask the stench.

Maisie seemed to be recovering when Albert returned to his platoon after two weeks, but after just three days in uniform, he received a telegram announcing that his beloved had contracted tetanus. When Albert again stood before his wife's hospital bed, she did not recognise him. Her formerly lively face was folded in a frightening grimace, her body stiffened in agony.

After praying for an end to her suffering, *"I walked out to get a nurse and a doctor, and as I walked back in, she died."*

Shipyards and ports were targeted

At the beginning of 1941, the sound of German aircraft ceased. The winter weather hampered raids and the Germans withdrew their aircraft to bases in Germany. The Kriegsmarine's commander, Erich Raeder, urged Hitler to support the U-boat fleet's battle to starve the British into submission through the sinking of British convoys in the Atlantic. To this end, he now asked the Luftwaffe to destroy as many shipyards and harbours as possible.

Only when the spring weather forecast once again proved favourable for bombing missions did the skies over Britain's coasts fill again with swarms of bombers carrying their deadly payloads. During March, Luftwaffe aircraft took off as many as 4,000 times, and the ports of Portsmouth, Southampton, Hull, Clyde and Cardiff went up in flames. The people of Plymouth suffered the heaviest attack of the spring when 240 bombers dropped 40,000 incendiary bombs on the port on the night of 10th-11th March. Oil tanks exploded along the quays and the city's lights went dark.

The Blitz's last great swarms of bombers came roaring through the gloom over London on the night of 11th May 1941, and in the few hours of darkness that followed, as many as 800 tonnes of bombs fell on the streets of the capital. More than 2,000 fires lit up the sky and by the end of the day, 1,486 people had died and 1,792 were injured.

After these last fierce air raids, the attacks lost their intensity. Hitler's focus was elsewhere as he began to plan the summer invasion of the Soviet Union. Meanwhile, the British were left to bury 43,000 civilians. Some were laid to rest in the ground, while others remained under the rubble of the million-plus buildings the Blitz had left in ruins.

The price may have been high, but the British had won the Battle of Britain. ■

Germans dropped bombs on London boroughs

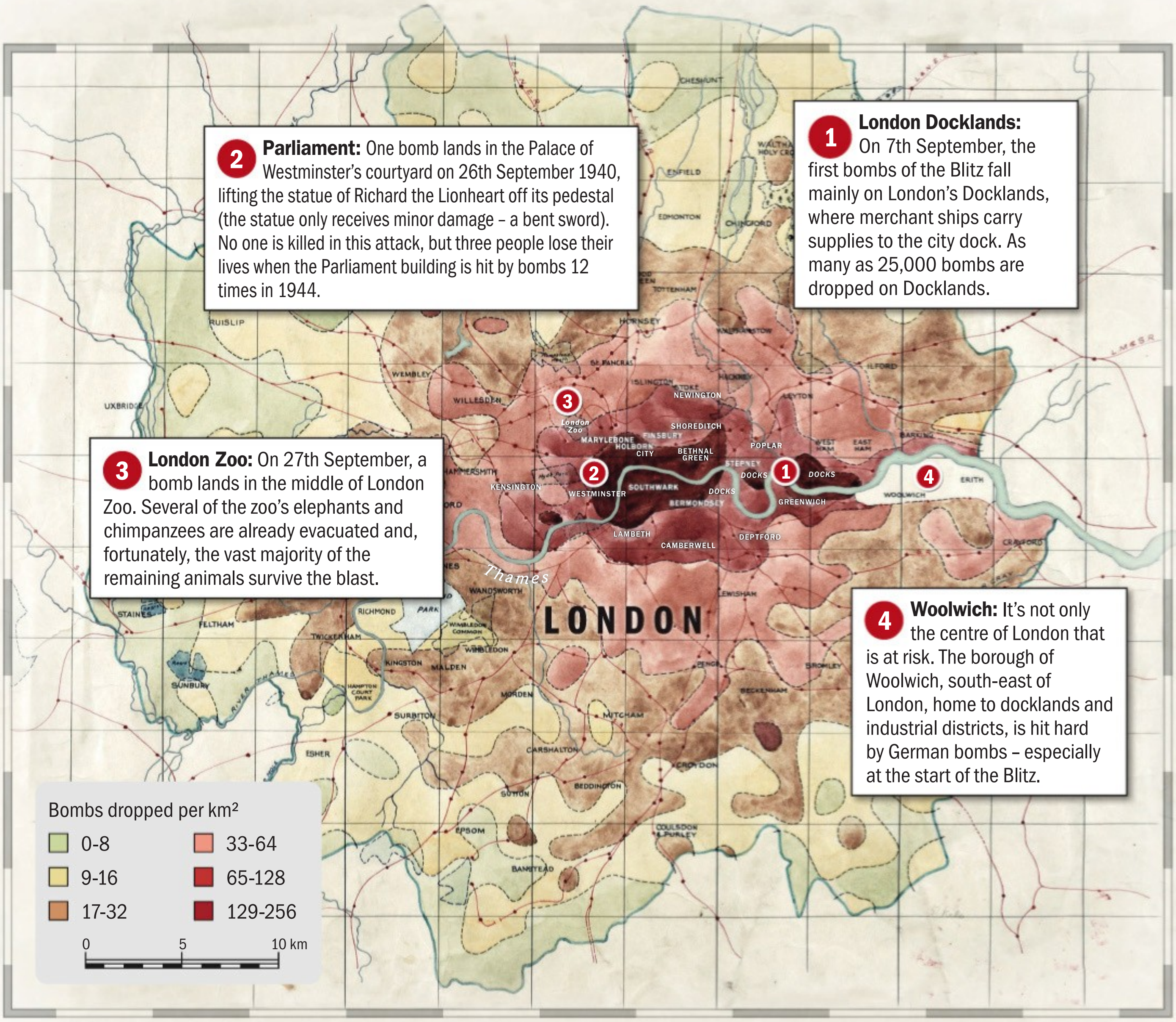
BRITAIN
London

From 7th September until 2nd December 1940, not a day went by without Londoners hearing the wail of sirens and then rushing to shelters. Around 60 percent of the more-than one million buildings bombed during the period were in London, and the raids left one in six of the capital's inhabitants homeless.

Initially, the Luftwaffe's bombs targeted London's eastern docklands, but as time passed, no resident of London's many boroughs was safe. Everything from ports, dockyards and factories to hospitals, schools, shops, pubs, residential areas, mansions, castles, official buildings and theatres were targeted. Over 18,000 tonnes of bombs fell on the British capital.

After the Blitz, a total of 750,000 tonnes of rubble had to be removed from the capital – a task that took around 1,700 freight trains six months to achieve. However, the debris wasn't simply dumped, but used to build runways for British bombers. They later paid the Germans back with interest as they terror-bombed German cities, transforming many of their town centres into smoking ruins.

The heart of government – *Westminster – was nearly destroyed by a bomb.*


CHESHUNT
ENFIELD
WALTHAM HOLY CROSS
EDMONTON
CHINGFORD
TOTTENHAM
HORNSEY
WALTHAMSTOW
RUISLIP
WEMBLEY
ST PANCRAS
ISLINGTON
STOKE NEWINGTON
HACKNEY
ILFORD
LEYTON
UXBRIDGE
WILLESDEN
London Zoo
SHOREDITCH
FINSBURY
MARYLEBONE
HOLBORN
CITY
BETHNAL GREEN
POPLAR
WEST HAM
EAST HAM
BARKING
HAMMERSMITH
KENSINGTON
WESTMINSTER
SOUTHWARK
STEPNEY
DOCKS
DOCKS
DOCKS
BERMONDSEY
GREENWICH
WOOLWICH
ERITH
LAMBETH
CAMBERWELL
DEPTFORD
CRAYFORD
Thames
WANDSWORTH
LONDON
LEWISHAM
STAINES
FELTHAM
TWICKENHAM
RICHMOND
PARK
WIMBLEDON COMMON
WIMBLEDON
KINGSTON
MALDEN
SUNBURY
RIVER THAMES
HAMPTON COURT PARK
SURBITON
MORDEN
MITCHAM
BECKENHAM
BROMLEY
ESHER
CARSHALTON
CROYDON
BEDDINGTON
SUTTON
EPSOM
COULSDON & PURLEY
BANSTEAD
1
2
3
4
Bombs dropped per km²
🟩 0-8
🟨 9-16
🟧 17-32
🟥 33-64
🟥 65-128
🟥 129-256
0
5
10 km

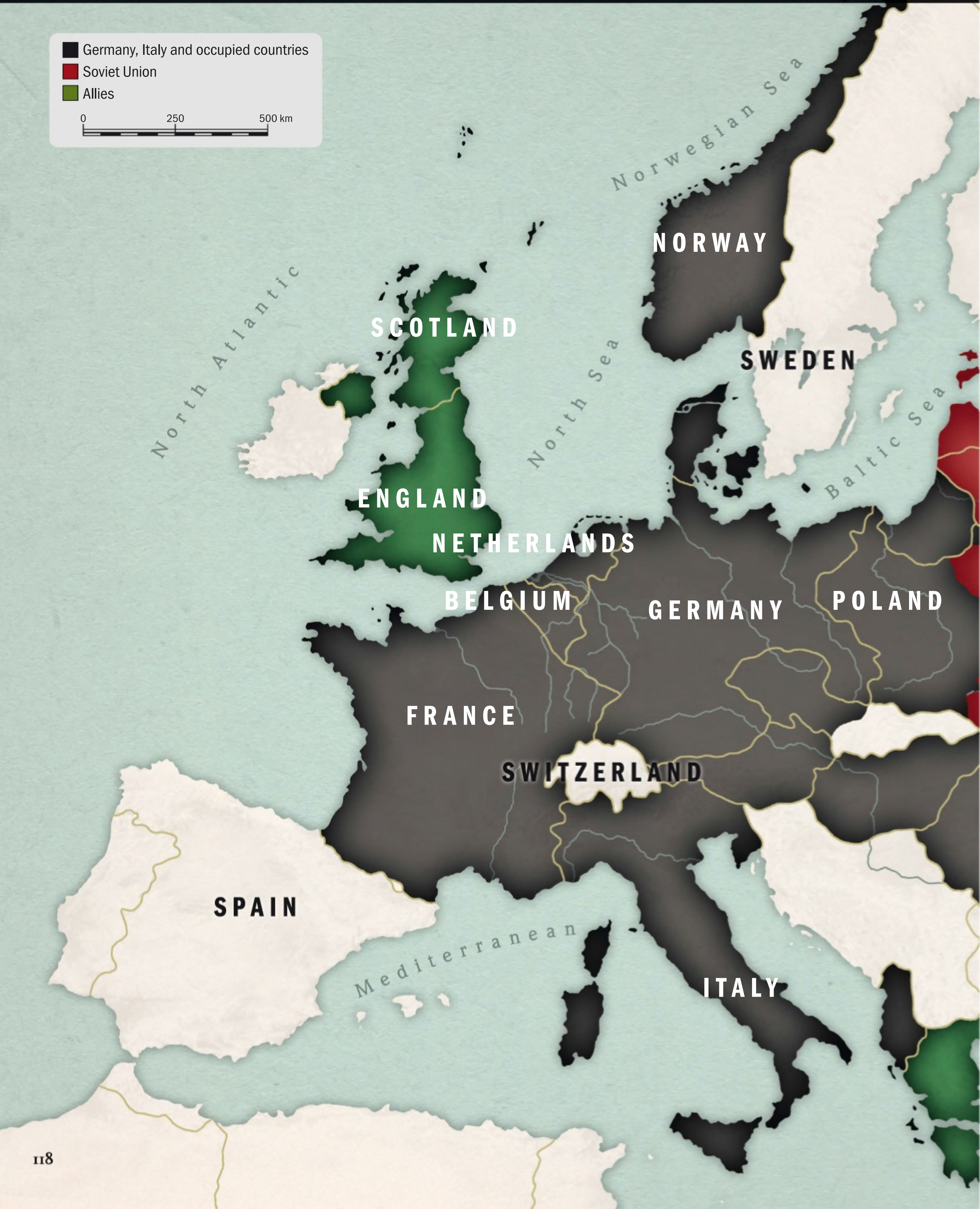
2 Parliament: One bomb lands in the Palace of Westminster's courtyard on 26th September 1940, lifting the statue of Richard the Lionheart off its pedestal (the statue only receives minor damage – a bent sword). No one is killed in this attack, but three people lose their lives when the Parliament building is hit by bombs 12 times in 1944.

1 London Docklands: On 7th September, the first bombs of the Blitz fall mainly on London's Docklands, where merchant ships carry supplies to the city dock. As many as 25,000 bombs are dropped on Docklands.

3 London Zoo: On 27th September, a bomb lands in the middle of London Zoo. Several of the zoo's elephants and chimpanzees are already evacuated and, fortunately, the vast majority of the remaining animals survive the blast.

4 Woolwich: It's not only the centre of London that is at risk. The borough of Woolwich, south-east of London, home to docklands and industrial districts, is hit hard by German bombs – especially at the start of the Blitz.

EUROPE – 23rd November 1940


Germany, Italy and occupied countries
Soviet Union
Allies
0
250
500 km
Norwegian Sea
North Atlantic
North Sea
Baltic Sea
Mediterranean
NORWAY
SCOTLAND
SWEDEN
ENGLAND
NETHERLANDS
BELGIUM
GERMANY
POLAND
FRANCE
SWITZERLAND
SPAIN
ITALY

FINLAND
SOVIET UNION
Black Sea
Winston Churchill

Europe was occupied in June 1940, *and only Great Britain, with Winston Churchill at the helm, still held out against the Germans.*

PICTURE INDEX

COVER

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WELCOME

pp.2-3: Imageselect, WolfgangS

CONTENTS

pp.4-5: Shutterstock, S. Devon/Air Ministry Second World War Official Collection/The Imperial War Museum

THE FALL OF FRANCE

pp.6-7: Shutterstock, Gemeentearchief Vlissingen/Oemoemenoe
p.8: Armémuseum (Swedish Army Museum), Ernst A Zwilling/Bundesarchiv
p.9: Getty Images
p.10: Narodowe Archiwum Cyfrowe
p.11: Imageselect
pp.12-13: Keating/War Office Second World War Official Collection/The Imperial War Museum
p.14: Alf van Beem
p.15: PhotosNormandie
p.16: Armémuseum (Swedish Army Museum)
p.17: Imageselect
pp.18-19: LA Puttnam/War Office Second World War Official Collection/The Imperial War Museum
p.20: Conseil Régional de Basse-Normandie/National Archives USA
p.21: Shutterstock, Keating/War Office Second World War Official Collection/The Imperial War Museum
p.22: Balcer
p.23: Air Ministry Second World War Official Collection/The Imperial War Museum
p.24: The Guardian
p.25: National Archives and Records Administration

THE PLAN TO OCCUPY BRITAIN

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pp.34-35: Getty Images/Bundesarchiv
p.36: National Library of France
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EXPERT INTERVIEW: RAF GAMBLED ON BOMBING THE ENEMY

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BATTLE OF BRITAIN

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p.62: Air Ministry Second World War Official Collection/The Imperial War Museum
p.63: The Australian War Memorial

WAR'S LAST EYEWITNESSES: "THE ATTACK CAME ON A BEAUTIFUL SUNDAY"

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RADAR WON THE WAR

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BRITAIN STRIKES BACK

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p.84: Air Ministry Second World War Official Collection/The Imperial War Museum, Cantons-de-l'Est
p.85: Capt. Horton/War Office Second World War Official Collection/The Imperial War Museum
pp.86-87: Richard James Molloy
pp.88-89: US Army, J Dowd/Air Ministry Second World War Official Collection/The Imperial War Museum

WAR'S LAST EYEWITNESSES: "I PUT THE PLANE INTO A PANIC POWER DIVE"

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BLITZ OVER LONDON

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pp.104-105: Imageselect, United States Armed Forces
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pp.114-115: Capt. Console/War Office Second World War Official Collection/The Imperial War Museum
p.116: US National Archives and Records Administration
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FINAL MAP

pp.118-119: Shutterstock, Capt. Horton/War Office Second World War Official Collection/The Imperial War Museum

READING LIST

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Operation Sea Lion – the German Plan to Invade Britain by Egbert Kieser, Weidenfeld Military; New edition, 1999

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BLITZ OVER LONDON

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Tel: +44 (0)7753 811622

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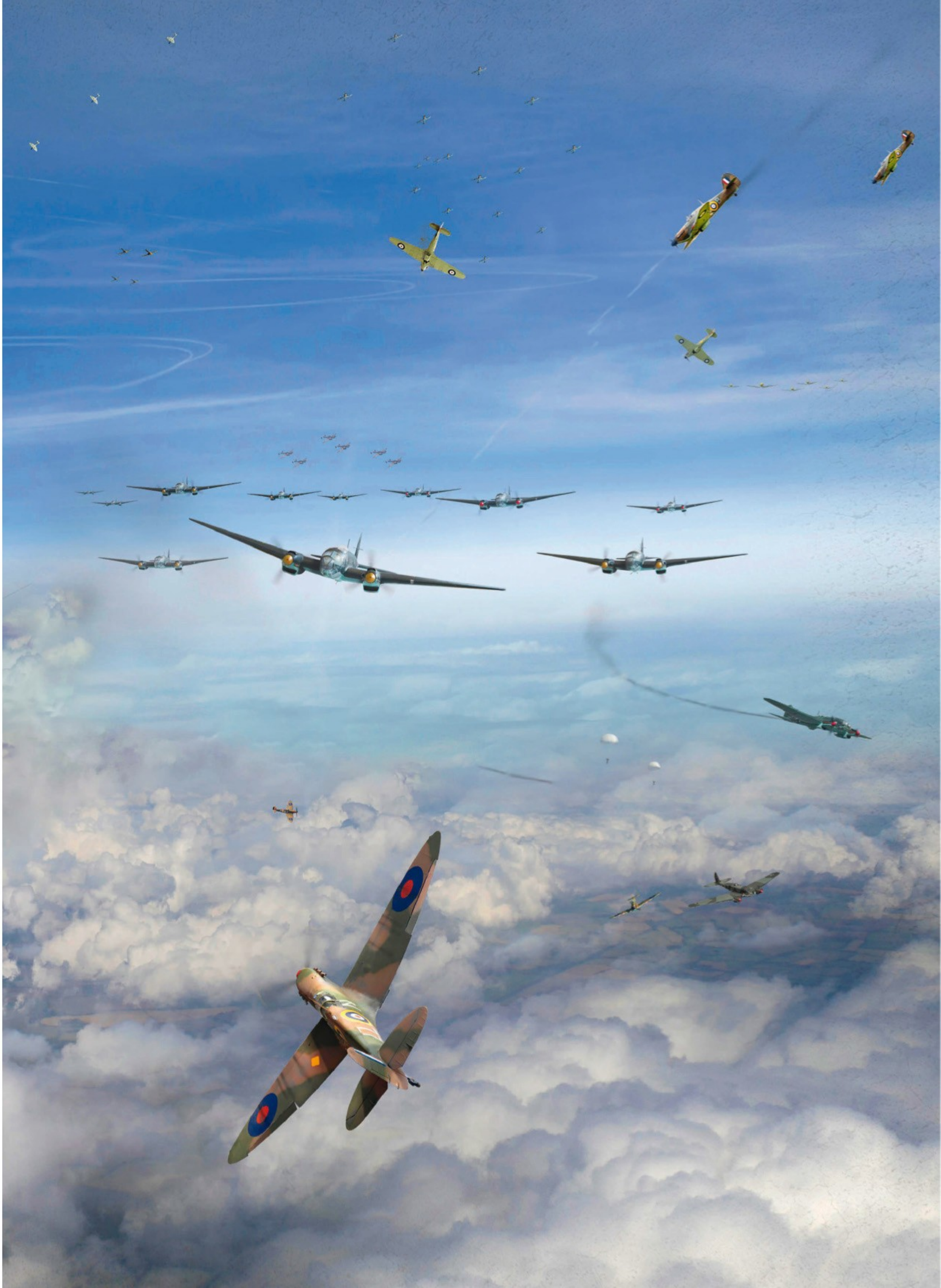

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